



*Environmental Engineering, Civil Engineering
Forensic Engineering, Construction Services*

**ADMINISTRATIVE CONSENT ORDER
PROGRESS REPORT
JULY 2018**

**Former United Shoe Machinery Division North Parcel
181 Elliott Street
Beverly, MA 01915**

Prepared for:

Cummings Properties, LLC
200 West Cummings Park
Woburn, MA 01801

Prepared by:

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August 29, 2018

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1.0 INTRODUCTION

This Progress Report was prepared in order to detail the field and sampling activities associated with the former United Shoe Machinery (USM) Division North Parcel at 181 Elliott Street in Beverly, Massachusetts (also referred to as the "Site"). Actions completed in this report relate to the approved Written Proposal/Sampling and Analysis Plan Revision 2 ("SAP") for the Site dated September 29, 2017 and the Elliott Landing SAP Revision 4 dated September 29, 2017 ("Elliott Landing SAP"). Refer to the attached **Figure 1** for the site locus and **Figure 2** for the site plan.

This Site has been identified in the RCRA 2020 Corrective Action Universe list established by the United States Environmental Protection Agency (EPA). By the year 2020, EPA and the authorized states plan to have largely completed the work of implementing final remedies at all facilities requiring Corrective Action. This Site is listed under site number MAD 043415991 as USM Machinery Division. As part of the RCRA 2020 program, EPA is overseeing an audit of the historical remedial actions conducted at the property by the former property owner, Stanley Black & Decker. EPA Region 1 has been working with the current owner's representative, Cummings Properties, LLC, on this Site since 2009, and in EPA's opinion, more sampling data are potentially needed to, among other things, understand whether vapor intrusion may be impacting indoor air quality and posing a threat to human health.

As part of EPA's audit and review of existing sampling data, EPA requires further examination to determine:

- whether vapor intrusion is occurring at locations identified by EPA, including but not limited to, buildings 100, 500, and 600;
- whether contamination exists in the Shoe Ponds that presents ecological risk to aquatic life;
- whether all underground storage tanks have been removed or properly abandoned, if there are releases to the environment from the tanks, and the nature and extent of any migration of contamination from existing tanks;
- whether residual polychlorinated biphenyl (PCB) contamination exists on the fourth floor of Building 100 (formerly occupied by the North Shore Regional Vocational School) in or proximate to the former machine shop and any other area on-site where PCBs were used/managed/released and/or identified as a contaminant of concern; and

- whether the PCB disposal areas (former chip grind shed and former ballfield area) meet the requirement of 40 CFR § 761.61 and the January 9, 1997 approval letter from EPA, including but not limited to the following:
 - (1) required protective cover,
 - (2) required cover maintenance,
 - (3) required AUL documentation, and
 - (4) appropriate documentation to verify that stabilized PCB contaminated soils were placed at least one foot above the high water table so that no migration of PCBs to groundwater is occurring.

These requirements were set forth in an Administrative Consent Order (ACO) between EPA and Cummings Properties, LLC with an effective date of April 13, 2017.

Specifically, this report documents actions that have taken place in July 2018 in furtherance of the work required in the ACO. Work was done in accordance with the SAP and the Elliott Landing SAP as updated September 29, 2017.

2.0 JUNE 2018 GROUNDWATER SAMPLING AND ANALYSIS

In accordance with the SAP and Elliott Landing SAP, groundwater sampling and analysis from the Site was performed in June 2018. These included wells not related to potential vapor intrusion (sampled previously in December 2017 and April 2018). Specific wells not related to vapor intrusion identified in the SAPs included wells FSL-1, FSL-2, FSL-3, FSL-4, FSL-5, FSL-6, FSL-7, FSL-11, FSL-12, FSL-13, FSL-14, and FSL-15. Analysis parameters as defined in the SAPs varied per well, but included extractable petroleum hydrocarbons / polycyclic aromatic hydrocarbons (EPH/PAH), volatile petroleum hydrocarbons (VPH), volatile organic compounds (VOCs), and polychlorinated biphenyls (PCBs). Refer to **Figure 2** for the site plan showing the locations of the groundwater monitoring wells.

Sampling was conducted June 29, 2018 by FSL and EST Associates, Inc. EPA project manager, Carolyn Casey, was present on Site to observe the sampling. Prior to sampling, the wells were sounded for depth to water and total well depth from the top of the casing, and were checked for the presence of nonaqueous phase liquid (NAPL). The groundwater wells were purged and sampled using low-flow sampling protocols. During purging, field parameters (pH, temperature, electrical conductivity, oxidation-reduction potential, dissolved oxygen, and turbidity) were collected and recorded on sampling logs. Samples were collected after the parameters had stabilized. No NAPL was observed. The results of the field parameters and individual well sampling records are included in **Appendix A**. Wells FSL-2 and FSL-3 could not be sampled as they ran dry during purging and did not recharge for sample collection. Groundwater field duplicates were collected at wells FSL-4 and FSL-12.

As of the date of the June Progress Report (July 13, 2018), the laboratory results for these groundwater samples were not available. The results of the groundwater laboratory analysis for wells not related to vapor intrusion are shown in **Table 1**. The table also includes the groundwater analysis results from the previous sampling event. The full laboratory analytical reports are included in **Appendix B**.

In summary, for the wells listed in **Table 1**, the results were consistent with the previous sampling events in December 2017 and April 2018. Trace PCBs were detected in two of the seven wells where PCBs were analyzed (PCBs were present in four wells in December 2017 and in three wells in April 2018), but the maximum total PCB concentration detected (0.259 ug/L) was orders of magnitude below the most conservative nondrinking water regulatory action level of 5 ug/L; the maximum PCB concentration detected in December 2017 was 0.0384 ug/L and the maximum PCB concentration detected in April 2018 was 0.0594 ug/L. Trace PAH were detected in eight of the nine wells where PAH were analyzed (predominantly naphthalene and 2-methylnaphthalene were detected), but the maximum concentrations detected were well below the most conservative nondrinking water regulatory action levels. For VPH and VOCs, ethylbenzene, m,p-xylene, C₉-C₁₂ aliphatic hydrocarbons, and cis-1,2-dichloroethene were detected in well FSL-7 at concentrations above the MCP Method 1 GW-2 and/or GW-3 standards; these were the same compounds detected in groundwater in December 2017 and April 2018, and in the soil sample collected during the installation of FSL-7. The remaining wells analyzed for VOCs and/or VPH had no such compounds detected.

3.0 JULY 2018 INDOOR AIR SAMPLING AND ANALYSIS

No soil gas or indoor air sampling was performed as part of the SAP and Elliott Landing SAP in July 2018. However, indoor air samples were collected outside the SAP scope of work in July 2018. These samples were collected specifically for the purpose of identifying possible indoor building sources for potentially elevated indoor air contaminants.

In Building 100, the previously-sampled suite with the overall highest concentration of indoor air contaminants is Suite S-135C, with the primary contaminants resulting in the majority of risk, including petroleum hydrocarbons (APH fractions and naphthalene), benzene, 1,2-dichloroethane, chloroform, carbon tetrachloride, isopropanol, and styrene. In reviewing commercial tenants in Building 100, two tenants adjacent to Suite S-135C were investigated as possible contaminant sources:

- American Schoen Company
100 Cummings Center, S-140A; and
- CrossFit Five Plus
100 Cummings Center, S-135E.

American Schoen is a manufacturing company that utilizes resins, solvents, and petroleum products. On reviewing the MSDS sheets for the various compounds present at the suite space, several materials contained significant amounts of petroleum hydrocarbons, naphthalene, isopropanol, and styrene. CrossFit Five Plus is a commercial gym; in the past there have been observations made of rubber odors from the suite.

Indoor air samples were collected at both Suites (S-140A and S-135E) in accordance with the protocols of the SAP. Refer to **Figure 3** for the site plan showing the specific locations of the indoor air sampling points.

For each of the noted indoor air sample locations (see **Figure 3**), a single air sample was collected. Samples were collected by FSL using a 6-liter canister for the purposes of collecting a 24 hour composite. Canisters and regulators were provided by Alpha Analytical of Mansfield, MA. One canister was placed in each of the sampling locations as described above. A separate canister as a field duplicate was also collected in Suite S-140A. Indoor air sampling was performed on July 19-20, 2018.

Details on the sampling canisters are provided in **Appendix C**. The canisters were received by Alpha Analytical on July 20, 2018 under a chain of custody. Samples were requested for analysis for Air-Phase Petroleum Hydrocarbons (APH) and VOCs using EPA Method TO-15.

Sample analysis was requested to be performed in the SIM mode to obtain the lowest achievable (most conservative) detection limits. As with the soil gas analysis, the potential identification of non-APH compounds (such as chlorinated solvents, ketones, and ethers) may represent an interference with the quantitative response within the aliphatic or aromatic hydrocarbon range. A specific request was made for non-APH compounds to be identified in the laboratory report form or narrative, so that the data may be evaluated for such potential interference.

The results of the indoor air laboratory analysis are shown in **Table 2**, and the full laboratory analytical report is included in **Appendix C**. In **Table 2**, the indoor air results are directly compared to the residential threshold values from the MassDEP Vapor Intrusion Guidance Policy WSC# 16-435 (October 2016 and the EPA Target Risk values (carcinogenic = 1E-06 or Hazard Index = 0.1; from the Regional Screening Level Resident Ambient Air Supporting Table updated November 2017).

Table 3 presents a comparison with the newly collected data and the existing indoor air and soil gas data at Suite S-135C. This data table shows the maximum concentrations detected for S-135C soil gas and indoor air from January-April 2018 and the maximum concentrations for indoor air at S-135E and S-140A. From this comparison, it appears that S-135E does not represent an indoor air contaminant source. Overall, the indoor air contaminant concentrations in S-135E are either equivalent to or less than the concentrations in S-135C. However, at S-140A, there is a significant increase in the indoor air

concentrations of petroleum hydrocarbons (APH, trimethylbenzenes, xylenes, and ethylbenzene), styrene, and isopropanol compared to S-135C. Moreover, these elevated concentrations in S-140A are not indicative of vapor intrusion based on the soil gas concentrations under S-135C (indoor air concentrations are significantly greater [in some cases orders of magnitude greater] than the soil gas concentrations).

The foregoing data suggest that the presence of petroleum hydrocarbons, styrene, and isopropanol in Suite S-135C may at least partially, if not predominantly, be due to Suite S-140A as an indoor source. The contaminants in Suite S-140A may also be impacting the other daycare locations in Building 100 (Suites S-149J and S-158D).

The remaining air contaminants as risk drivers (benzene, 1,2-dichloroethane, chloroform, and carbon tetrachloride) were also detected at one or both of Suites S-135E and S-140A at concentrations either comparable or greater than those found in Suite S-135C, suggesting that these compounds are indicative of exterior ambient air or overall building air quality.

4.0 ADDITIONAL JULY 2018 ACTIVITIES

Actions taken in July 2018 included the completion of letters to be delivered to the individual day care facilities at the Site and Elliott Landing (including Site-specific data and conclusions); these letters were approved by EPA and finalized on July 20, 2018. The letters were hand-delivered on July 24, 2018.

In addition, a Baseline Site Risk Characterization (based on the results of the vapor intrusion sampling) was prepared. The document was submitted to EPA on August 14, 2018.

5.0 NEXT SCHEDULED ASSESSMENT ACTIVITIES

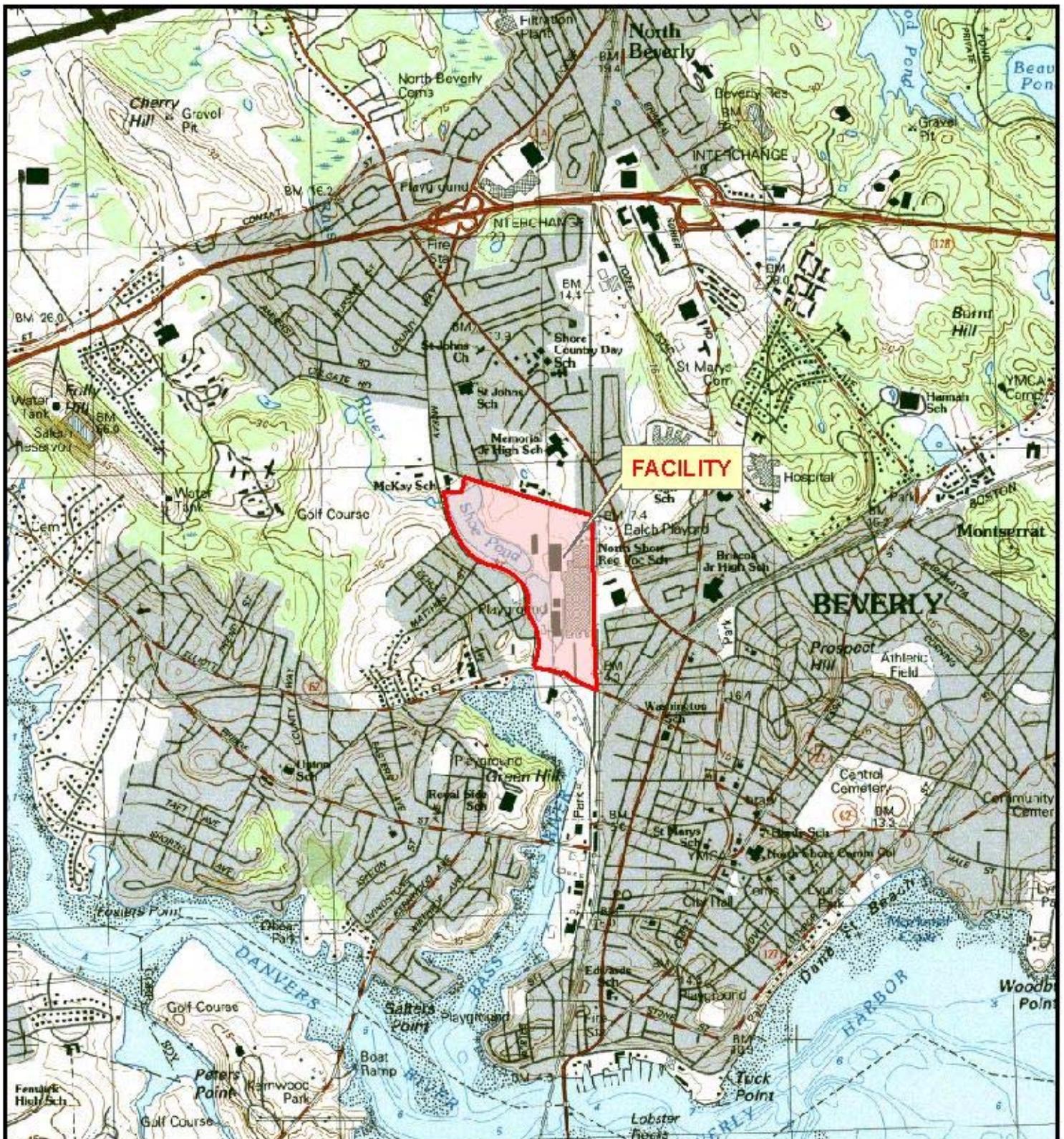
In accordance with the Site SAP and the Elliott Landing SAP, the next sampling event had been scheduled for September 2018 for groundwater wells related to historical groundwater contamination. EPA's requests for revised submittals and MassDEP's unanticipated intervention into the ongoing work will likely result in an extension of the proposed timetable. When sampling is conducted, results from the sampling will be included in a Progress Report to be submitted to EPA following receipt and evaluation of the data.

FIGURES

Figure 1 – Locus Plan

Figure 2 – Site Plan

Figure 3 – Indoor Air Sampling Locations – 100 Cummings Center, Suites 135E and 140A



SITE COORDINATES
 Longitude: -70.8871 W
 Latitude: 42.5596 N
 UTM 4,713,634m N
 345,086m E

Approximate Scale: 1 inch = 2,000 feet (1:24,000)
 0 1,000 2,000 4,000 6,000
 Feet

Figure 1 - Locus Plan

Project Number: 12201
 Client: Cummings

Created By: EAF Date: 03/15/12
 Checked By: BH Date: 03/15/12

Former United Shoe Machinery North Parcel
 181 Elliott Street
 Beverly, MA

Reference: MassGIS USGS Quadrangle: SALEM and MARBLEHEAD NORTH
 Image: M12201_Beverly/2012/Figures



FIGURE 2

SITE PLAN



FORMER UNITED SHOE
MACHINERY NORTH PARCEL
181 ELLIOTT STREET
BEVERLY MA

LEGEND

The legend consists of four entries, each with a colored square icon and text: a red and white diagonal-striped box labeled 'STABILIZED SOIL DISPOSAL AREA', a solid yellow box labeled 'TANKS', an orange circle with a cross labeled 'FSL-X PROPOSED WELL', and a blue circle with a cross labeled 'HISTORIC PHASE II WELL'.

NORTH



*Environmental Engineering
& Site Remediation*

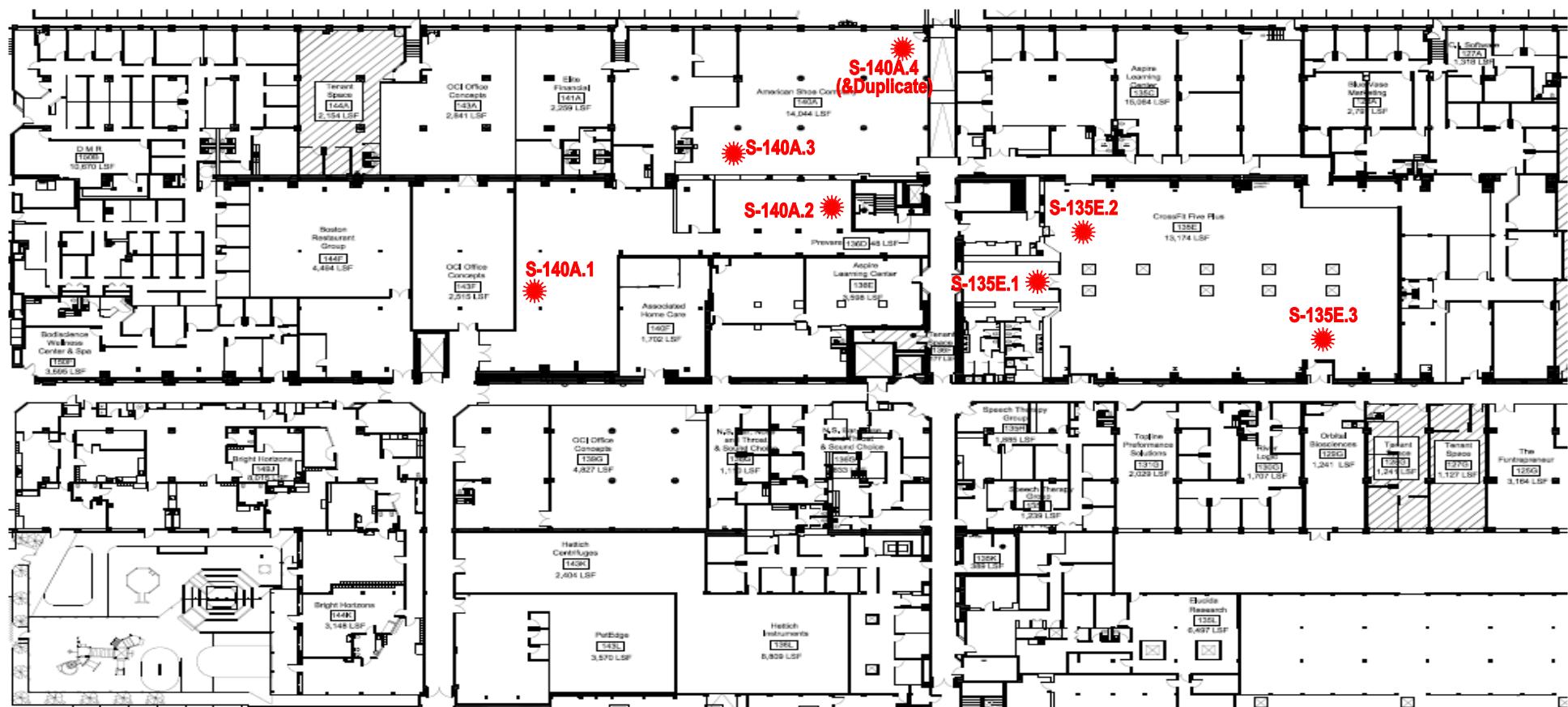
358 CHESTNUT HILL AVENUE
BOSTON MASS 02135
(617) 233-0001

NOTE:
Locations taken from Haley & Aldrich Plan
Dated October 30, 1997.

SCALE:	1' = 125' + / -
DRAWN:	RT
CHK'D:	BAH
DATE:	3/29/17
DATE REV:	3/12/18

N

Figure 3
Indoor Air Sampling Locations
100 Cummings Center- Suites 135E & 140A



358 Chestnut Hill Ave
Boston MA 02135
(617) 232-0001

Indoor Air Sample

TABLES

Table 1 – Groundwater Analytical Results – Wells Not Associated with Vapor Intrusion

Table 2 – Indoor Air Chemical Analytical Results – July 2018

Table 3 – Indoor Air and Soil Gas Data Comparison

water Analytical Results - Wells Not Associated with Vapor Intrusion

Cummings Center
181 Elliott Street
Beverly, MA 01915

All results in ug/L
Values in **bold** exceed applicable MADEP Method 1 GW Standard OR Applicable Reportable Concentration
-- = Not Analyzed

-- = Not Analyzed
NS = No Standard
NA = Not Applicable

NA = Not Applicable
1 = The Massachusetts

1 = The Massachusetts
3 = The Massachusetts

4 = The Massachusetts Contingency Plan, 310 CMR 40.0996(6): Table 6, April 25, 2014

TABLE 2

Indoor Air Chemical Analysis Results
Cummings Center, Beverly, MA
July 2018

Sample ID	S-1305.C.1	S-1305.C.2	S-1305.C.3	S-1404.L.1	S-1404.L.2	S-1404.S.3	S-1404.S.4	Duplicate of S-1404.A.	EPA Target Risk: Carcinogenic = 1E-06 or HI = 0.1	MassDEP Residential Threshold Values
Sample Location	Building 100 Interior, Suite 135	Building 100 Interior, Suite 135	Building 100 Interior, Suite 135	Building 100 Interior, Suite 140						
Sample Type	Indoor Air									
Date Sampled	7/19/2018 to 7/20/2018	7/19/2018 to 7/20/2018								
Volatile Organic Compounds (µg/m ³)										
1,1,1-trichloroethane	0.044 J	0.049 J	0.055 J	1.49	3.59	0.213	0.207	0.202	520 (HI)	3
1,1,1,2-tetrachloroethane	<0.011	<0.011	<0.043	<0.011	<0.041	<0.041	<0.041	<0.041	0.38	
1,1,2,2-tetrachloroethane	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.04
1,1,2-trichloroethane	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	0.18	0.15
1,1-dichloroethane	0.061 J	0.069 J	0.069 J	0.036 J	<0.028	<0.028	<0.028	<0.028	1.8	0.8
1,1-dichloroethene	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	21 (HI)	0.8
1,2,4-trichlorobenzene	<0.074	<0.074	<0.074	<0.074	<0.074	<0.074	<0.074	<0.074	0.21 (HI)	0.4
1,2,4-trimethylbenzene	0.462	0.447 J	0.334	28.5	27.3	8.50	8.75	7.96	6.1 (HI)	
1,2-dichloroethane	0.021	0.021	0.022	0.022	0.022	0.022	0.022	0.022	0.047	0.0078
1,2-dichloroethene	<0.036	<0.036	<0.036	<0.036	0.078 J	<0.036	<0.036	<0.036	21 (HI)	0.72
1,2-dichloroethane	0.150	0.138	0.138	0.117	0.121	0.089	0.089	0.085	0.11	0.09
1,2-dichloropropane	<0.037	<0.037	<0.037	0.037 J	<0.037	<0.037	<0.037	<0.037	0.037	0.76
1,3,5-trimethylbenzene	0.152	0.147	0.113	8.11	7.77	2.59	2.56	2.54	6.3 (HI)	
1,3-butadiene	0.018 J	0.018	0.022	0.126	0.126	0.060	0.066	0.062	0.094	
1,4-dichloroethylene	0.036	0.036	0.036	<0.035	<0.035	<0.035	<0.035	<0.035	21 (HI)	0.6
1,4-dichlorobenzene	0.060 J	0.048	0.048	0.060 J	0.096 J	0.114 J	0.060 J	0.066 J	0.26	0.5
1,4-dioxane	0.148 J	0.148 J	0.166 J	0.094 J	0.105 J	0.087 J	0.097 J	0.083 J	0.56	0.47
2,2,4-trimethylpentane	0.369 J	0.411 J	0.355 J	<0.126	<0.126	<0.126	<0.126	<0.126	N/A	
2-butanone	1.37 J	1.42 J	1.53	8.02	7.40	3.92	3.86	3.95	520(HI)	12
2-hexanone	<0.123	<0.123	<0.123	0.385 J	0.410 J	0.467 J	0.479 J	0.459 J	3.1(HI)	
3-chloropropene	<0.053	<0.053	<0.053	<0.053	<0.053	<0.053	<0.053	<0.053	0.47	
4-Ethynylbenzene	0.113	0.113	0.089 J	8.11	7.47	2.47	2.47	2.37	N/A	
Acetone	14.5	14.8	17.5	82.7	129	118	118	101	3,200(HI)	91
Benzene	0.246 J	0.268 J	0.243 J	0.457	0.486	0.447	0.466	0.438	0.36	2.3
Benzyl Chloride	<0.192	<0.192	<0.192	<0.192	<0.192	<0.192	<0.192	<0.192	0.057	
Bromodifluoromethane	<0.054	<0.054	<0.054	0.134	<0.054	<0.054	<0.054	<0.054	0.076	0.13
Bromoform	0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	2.6	2.1
Bromoethane	0.035 J	0.031	0.031	0.031 J	0.53(HI)	0.6				
Carbon disulfide	0.358 I	0.390 J	0.416 J	0.283 J	0.308 J	<0.196	<0.196	<0.196	73 (HI)	
Carbon tetrachloride	0.428	0.472	0.447	0.459	0.469	0.447	0.447	0.415	0.47	0.54
Chlorobenzene	<0.032	<0.032	<0.032	0.074 J	<0.032	0.065 J	<0.032	<0.032	5.2 (HI)	2.3
Chloroethane	0.219 J	0.208 J	0.256 J	13.6	14.5	3.46	3.77	3.27	1,000 (HI)	
Chlorofluorocarbon	0.374	0.374	0.374	0.557	0.557	0.557	0.557	0.557	0.12	1.9
Chloroform	0.826	0.821	1.02	1.13	1.04	0.998	1.09	0.964	0.84 (HI)	
Cis-1,2-dichloroethene	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	N/A	0.8
Cis-1,3-dichloropropene	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	0.7	0.58
Cyclohexane	0.203 J	0.558 J	0.141 J	1.41	1.19	0.675 J	0.640 J	0.657 J	100 (HI)	
Dibromochloromethane	<0.068	<0.068	<0.068	<0.068	<0.068	<0.068	<0.068	<0.068	N/A	0.097
Dichlorodifluoromethane	1.41	1.46	1.38	1.84	1.83	1.35	1.46	1.70	10 (HI)	
Ethane	11.3	11.3	11.8	47.7	46.0	3.60	3.76	3.13	N/A	
Ethyl acetate	0.587 J	0.548 J	0.501 J	8.29	31.4	21.7	23.8	15.7	73 (HI)	
Ethybenzene	0.513	0.456	0.395	10.8	12.5	37.2	37.5	40.8	1.1	7.4
Eugenol	0.422	0.429	0.475	0.483	0.468	0.445	0.460	0.452	520 (HI)	
Euro-113	0.081	<0.081	0.084 J	0.084 J	0.084 J	<0.081	<0.081	<0.081	N/A	
Euro-114	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	0.13	0.11
Hexachlorobutadiene	0.043 J	0.367 J	0.349 J	2.62	2.70	1.11	1.07	1.06	73 (HI)	
Heptane	0.143 J	0.143 J	0.143 J	1.02	1.02	1.02	1.02	1.02	21 (HI)	
Isobutyl alcohol	0.530	0.524	0.524	0.524	0.524	0.524	0.524	0.524	100	11
Methylene chloride	1.37 J	<0.869	0.928 J	2.90	2.12	1.08 J	1.19 J	1.10 J	100	
MTBE	6.48	7.21	6.88	2.51	2.59	1.07 J	1.20 J	1.04 J	330 (HI)	2.2
MTBE	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	<0.022	0.162 J	11
M+p-xylene	6.78	6.04	5.69	66.5	78.2	254	261	273	10 (HI)	20
n-heptane	0.250 J	0.279 J	0.250 J	4.92	2.91	12.5	15.0	9.18	42 (HI)	
Naphthalene	0.035	0.035	0.035	1.13	2.39	1.01	1.26	1.37	0.083	0.6
o-xylene	0.747	0.652	0.608	23.6	26.1	83.4	86.9	90.8	10 (HI)	20
Propylene	0.308 J	0.301 J	0.379 J	5.52	4.06	1.84	1.61	1.66	310 (HI)	
Silvrene	2.57	2.17	2.08	24.5	24.2	201	174	183	100 (HI)	1.4
Tetrachloroethylene	0.122 J	0.176	0.108 J	0.373	0.380	0.332	0.339	0.325	11	1.4
Tetrahydrofuran	2.12	2.23	2.19	1.52	2.22	1.96	3.30	1.15 J	210 (HI)	
Toluene	1.83	1.83	1.83	0.53	2.01	1.11	1.14	1.10	500 (HI)	54
Trans-1,2-dichloroethene	<0.024	<0.024	0.024 J	0.024 J	0.024 J	<0.024	<0.024	<0.024	N/A	0.8
Trans-1,3-dichloropropene	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	0.7	0.58
Trichloroethene	<0.038	<0.038	<0.038	0.306	0.328	0.881	0.924	0.973	0.48	0.4
Trichlorofluoromethane	0.916	0.933	1.01	1.35	1.42	1.01	1.07	1.04	N/A	
Vinyl acetate	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	21 (HI)	
Vinyl bromide	<0.101	<0.101	<0.101	<0.101	<0.101	<0.101	<0.101	<0.101	<0.101	0.088
Vinyl chloride	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.17	0.27

TABLE 2

Indoor Air Chemical Analysis Results
 Cummings Center, Beverly, MA
 July 2018

Sample ID	S-1335C.1	S-1335C.2	S-1335C.3	S-1404A.1	S-1404A.2	S-1404A.3	S-1404A.4	Duplicate of S-1404A.4	EPA Target Risk: Carcinogenic = 1E-06 or HI = 0.1	MassDEP Residential Threshold Values
Sample Location	Building 100 Interior, Suite 135	Building 100 Interior, Suite 135	Building 100 Interior, Suite 135	Building 100 Interior, Suite 140						
Sample Type	E	E	E	A	A	A	A			
Date Sampled	7/19/2018 to 7/20/2018	7/19/2018 to 7/20/2018								
Volatile Organic Compounds (µg/m³)										
Air-Phase Petroleum Hydrocarbon Target Analytes - APH (µg/m³)										
1,3-Butadiene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.094	
Methyl-tert-butyl ether	<0.70	<0.70	<0.70	<0.70	<0.70	<0.70	<0.70	<0.70	1.1	39
Isobutene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.35	2.3
Toluene	1.6	1.4	1.2	15	20	13	14	11	520 (HI)	54
Ethylbenzene	<0.90	<0.90	<0.90	9.6	11	33	34	36	1.1	7.4
m- & p- Xylenes	6.2	5.4	5.1	60	70	230	240	250	10 (HI)	20
o-Xylenes	<0.90	<0.90	<0.90	21	24	76	80	82	10 (HI)	20
Naphthalene	1.5	<1.1	<1.1	1.7	2.3	3.0	3.1	3.2	0.083	0.6
All Petroleum Hydrocarbons - APH (µg/m³)										
C ₀ -C ₄ Aliphatic Hydrocarbons	20	14	14	61	110	26	27	<10	N/A	58
C ₅ -C ₁₁ Aliphatic Hydrocarbons	21	21	<10	740	1000	300	260	280	N/A	68
C ₁₂ -C ₁₆ Aromatic Hydrocarbons	<10	<10	<10	98	98	62	60	61	N/A	10

Notes:

Samples collected by FSL Associates, Inc.

Samples submitted to Alpha Analytical of Mansfield, MA

Results presented in µg/m³

NR - Not Reported

I = estimated concentration quantified below reporting limit

BDOD = Detected above laboratory detection limit

gray shaded = detected above applicable standard

blue shaded = analytical detection limit above applicable standard

< = not detected above laboratory detection limit shown

EPA Target Risk Levels are from Regional Screening Level Resident Ambient Air Supporting Table, November 2017. Values preceding "(HI)" indicate compounds that are not considered to be carcinogenic and risk levels are based on noncarcinogenic risk. "N/A" indicates compounds with no risk information available from this source.

MassDEP Residential Threshold Values are from Public Draft Review Vapor Intrusion Guidance, MassDEP Policy WSC# 16-435, October 2016.

TABLE 3

Indoor Air and Soil Gas Data Comparison

Suite 135-C, Suite 135-E, and Suite S-140A, Building 100, Cummings Center, Beverly, MA
January 2018, April 2018, and July 2018

Sample ID	Maximum Concentrations	Maximum Concentrations	Maximum Concentration	Maximum Concentration	EPA Target Risk: Carcinogenic +	MassDEP Residential Threshold Values
Sample Location	Building 100 Suite 135-C	Building 100 Suite 135-C	Building 100 Suite 135-E	Building 100 Suite 140-A		
Sample Type	Indoor Air	Soil Gas	Indoor Air	Indoor Air		
Date Sampled	January 2018 and April 2018	January 2018 and April 2018	July 2018	July 2018		
Volatile Organic Compounds (µg/m³)						
1,1,1-trichloroethane	0.169	16.4	Not Detected	3.59	520 (H)	3
1,1,1,2-tetrachloroethane	Not Detected	Not Detected	Not Detected	0.38	N/A	
1,1,2,2-tetrachloroethane	Not Detected	Not Detected	Not Detected	0.048	0.04	
1,1,2-trichloroethane	Not Detected	Not Detected	Not Detected	0.18	0.15	
1,1-dichloroethane	0.057	1.3	Not Detected	Not Detected	1.8	0.8
1,1-dichloroethene	Not Detected	Not Detected	Not Detected	Not Detected	21 (H)	0.8
1,2,4-trichlorobenzene	Not Detected	0.082	Not Detected	Not Detected	0.21 (H)	0.4
1,2,4-trimethylbenzene	1.35	5.26	0.462	28.5	6.3 (H)	
1,2-dibromoethane	Not Detected	Not Detected	Not Detected	Not Detected	0.0047	0.0078
1,2-dichlorobenzene	Not Detected	0.096	Not Detected	Not Detected	21 (H)	0.72
1,2-dichloroethane	0.150	0.105	0.150	0.121	0.11	0.09
1,2-dichloropropane	0.037	Not Detected	Not Detected	Not Detected	0.76	0.12
1,3,5-trimethylbenzene	0.369	5.36	0.152	8.11	6.3 (H)	
1,3-butadiene	0.047	0.04	Not Detected	0.128	0.094	
1,3-dichlorobenzene	Not Detected	Not Detected	Not Detected	Not Detected	21 (H)	0.6
1,4-dichlorobenzene	Not Detected	0.337	Not Detected	Not Detected	0.26	0.5
1,4-dichloroethene	0.048	Not Detected	Not Detected	Not Detected	0.45	0.47
2,2,4-trimethylpentane	0.224	Not Detected	Not Detected	Not Detected	N/A	12
2-butanone	2.95	5.57	1.53	8.02	520(H)	
2-hexanone	0.447	0.902	Not Detected	Not Detected	3.1(H)	
2-chloropropane	Not Detected	Not Detected	Not Detected	Not Detected	0.47	
4-Ftahydrone	0.339	1.63	0.118	8.11	N/A	
Acetone	43.7	31.8	17.5	129	3,200(H)	91
Benzene	0.431	1.11	Not Detected	0.486	0.36	2.3
Benzyl Chloride	Not Detected	Not Detected	Not Detected	Not Detected	0.057	
Bromodichloromethane	Not Detected	Not Detected	Not Detected	Not Detected	0.134	0.076
Bromoform	0.238	Not Detected	Not Detected	Not Detected	2.6	2.1
Bromomethane	0.074	0.039	Not Detected	Not Detected	0.52(H)	0.6
Carbon disulfide	Not Detected	0.346	Not Detected	Not Detected	73 (H)	
Carbon tetrachloride	0.616	4.33	0.472	0.465	0.47	0.54
Chlorobenzene	Not Detected	0.129	Not Detected	Not Detected	0.465	2.3
Chlorofluorane	0.103	3.2	Not Detected	Not Detected	1,000 (H)	
Chlorofluorane	0.230	2.74	0.391	0.398	0.12	1.9
Chloromethane	1.2	0.923	1.03	1.13	9.4 (H)	
Cis-1,2-dichloroethene	Not Detected	0.151	Not Detected	Not Detected	N/A	0.8
Cis-1,3-dichloropropene	Not Detected	Not Detected	Not Detected	Not Detected	0.7	0.58
Cyclohexane	0.286	0.277	Not Detected	1.41	100 (H)	
Dibromochloromethane	Not Detected	Not Detected	Not Detected	Not Detected	N/A	0.097
Dichlorodifluoromethane	2.23	2.85	1.46	1.84	10 (H)	
Ethanol	699	57.8	18.8	450	N/A	
Ethyl acetate	4.9	0.559	Not Detected	31.4	7.3 (H)	
Ethylbenzene	0.413	1.58	0.513	40.8	1.1	7.4
Freon-113	0.667	0.69	0.475	0.483	520 (H)	
Freon-114	0.119	0.105	Not Detected	Not Detected	N/A	
Hexachlorobutadiene	Not Detected	Not Detected	Not Detected	Not Detected	0.13	0.11
Hexane	0.691	0.574	Not Detected	2.70	73 (H)	
Isobutyl alcohol	2.00	1.1	Not Detected	1.65	21 (H)	
Methylene chloride	1.34	3.01	Not Detected	2.90	100	11
MBK	1.7	1.87	7.21	2.59	310 (H)	2.2
MTBE	Not Detected	Not Detected	Not Detected	Not Detected	11	39
Meta-xylene	2.27	4.39	6.78	273	10 (H)	20
p-heptane	2.02	1.18	Not Detected	20.5	42 (H)	
Naphthalene	4.59	1.25	1.65	3.27	0.083	0.6
p-xylene	0.508	1.89	0.747	90.8	10 (H)	20
Propylene	0.384	1.29	Not Detected	5.52	310 (H)	
Styrene	2.91	2.29	2.57	201	100 (H)	1.4
Tetrachloroethylene	0.19	3.81	0.176	0.380	11	1.4
Tetrahydrofuran	0.552	2.36	2.23	3.30	210 (H)	
Toluene	16.7	11.2	1.63	21.4	520 (H)	54
Trans-1,2-dichloroethene	Not Detected	Not Detected	Not Detected	Not Detected	N/A	0.8
Trans-1,3-dichloropropene	Not Detected	0.059	Not Detected	Not Detected	0.7	0.58
Trichloroethene	0.119	8.2	Not Detected	0.13	0.48	0.4
Trifluoromethane	2.93	3.75	1.41	1.42	N/A	
Vinyl acetate	Not Detected	Not Detected	Not Detected	Not Detected	21 (H)	
Vinyl bromide	Not Detected	Not Detected	Not Detected	Not Detected	0.088	
Vinyl chloride	Not Detected	Not Detected	Not Detected	Not Detected	0.17	0.27
Air-Phase Petroleum Hydrocarbons - APH (µg/m³)						
C ₁ -C ₄ Aliphatic Hydrocarbons	290	190	20	110	N/A	58
C ₅ -C ₈ Aliphatic Hydrocarbons	120	820	21	1000	N/A	68
C ₉ -C ₁₂ Aromatic Hydrocarbons	Not Detected	38	Not Detected	98	N/A	10

Notes:

Samples collected by FSL Associates, Inc.

Samples submitted to Alpha Analytical of Mansfield, MA

Results presented in µg/m³

NR = Not Reported

J = estimated concentration quantified below reporting limit

< = detection limit above laboratory detection limit shown

gray shaded = detected above applicable standard

blue shaded = analytical detection limit above applicable standard

< = not detected above laboratory detection limit shown

EPA Target Risk Levels are from Regional Screening Level Resident Ambient Air Supporting Table, November 2017. Values preceding "(H)" indicate compounds that are not considered to be carcinogenic and risk levels are based on noncarcinogenic risk. "N/A" indicates compounds with no risk information available from this source.

MassDEP Residential Threshold Values are from Vapor Intrusion Guidance, MassDEP

Policy WSC# 16-435, October 2016.

APPENDIX A

GROUNDWATER SAMPLING WELL RECORDS AND FIELD PARAMETERS

EST - LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME Cummings Beverly
LOCATION Beverly, MA
SAMPLING CREW KJ, BC

PURGING DATA

REFERENCE POINT: PVC
DEPTH TO WATER 2.45 (FT) Steel Casing PURGING DEVICE:
WELL DEPTH peristaltic pump (FT)
Well Diameter 2

FINAL FIELD DATA

pH: 6.54 (S.U.)
SPECIFIC CONDUCTANCE: 10.1 (mS/cm)
TEMPERATURE: 17.60 ($^{\circ}$ C))
DO: 1.16 (mg/L)
TURBIDITY: 1.0 (NTU)
ORP: -104 (MV)
COMMENTS: Field duplicate - 1
Collected

ODOR AND PHYSICAL APPEARANCE OF SAMPLE: Clear, no odor

WEATHER CONDITIONS: Sun, 80's

WELL CONDITION DATA

Protective Casing Present:

Y
Y
Y

Concrete pad present:

Standing Water:

Q Y N N

8 of 14

Cap on User:

y N

Protective Casing Locked:

Physical Damage:

If yes, Describe:

SAMPLER'S SIGNATURE:

John D. Jr.

EST - LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME	Cummings Beverly					WELL ID	FSL-5			
LOCATION	Beverly, MA									
SAMPLING CREW						DATE:	6/29/18			
						SAMPLE TIME:	1020			
PURGING DATA										
REFERENCE POINT: DEPTH TO WATER	PVC <u>4.60</u>	Steel Casing (FT)	PURGING DEVICE: WELL DEPTH	<u>peristaltic pump</u> <u>15.25</u>	(FT)	Well Diameter	2			
CLOCK TIME	STATIC DEPTH (FT)	PURGE RATE (ML)	CUM. VOLUME PURGED (L)	TEMP (°C)	SP. COND (mS/cm)	pH (s.u.)	ORP/Eh (MV)	DO (mg/L)	Turb (NTU)	COMMENTS
0950	5.35	200	1	18.58	10.3	7.03	-26	2.36	31.5	
0955	5.35	200	2	18.63	10.1	7.04	-28	2.29	26.2	
1000	5.35	200	3	18.79	5.10	7.13	-25	2.20	30.2	
1005	5.40	200	4	18.80	4.5	7.14	-25	2.18	34.1	
1010	5.40	200	5	18.90	4.4	7.13	-24	2.16	38.9	
1015	5.40	200	6	18.90	4.4	7.12	-24	2.10	39.1	
FINAL FIELD DATA										
pH:	7.12			(S.U.)	DO:	2.16			(mg/L)	COMMENTS:
SPECIFIC CONDUCTANCE:	11.4			(mS/cm)	TURBIDITY:	38.1			(NTU)	
TEMPERATURE:	19.00			(°C)	ORP:	-24			(MV)	
ODOR AND PHYSICAL APPEARANCE OF SAMPLE:	Brown, no odor									
WEATHER CONDITIONS:	Sun, 80's									
WELL CONDITION DATA										
Protective Casing Present:	<input checked="" type="radio"/>	<input type="radio"/>	Concrete pad present:	<input checked="" type="radio"/>	<input type="radio"/>	Cap on riser:	<input checked="" type="radio"/>	<input type="radio"/>		
Protective Casing Locked:	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Standing Water:	<input type="radio"/>	<input checked="" type="radio"/>	Visible Heaving:	<input checked="" type="radio"/>	<input checked="" type="radio"/>		
Physical Damage:	<input checked="" type="radio"/>	<input checked="" type="radio"/>								
If yes, Describe:										
SAMPLER'S SIGNATURE:										

EST - LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME	Cummings Beverly				WELL ID	ESL-6				
LOCATION	Beverly, MA									
SAMPLING CREW	KJ, BC				DATE:	6/24/18				
SAMPLE TIME: 1120										
PURGING DATA										
REFERENCE POINT:	PVC	Steel Casing	PURGING DEVICE:	peristaltic pump						
DEPTH TO WATER	2.00	(FT)	WELL DEPTH	10.40 (FT)						
Well Diameter					2					
CLOCK TIME	STATIC DEPTH (FT)	PURGE RATE (ML)	CUM. VOLUME PURGED (L)	TEMP (°C)	SP. COND (mS/cm)	pH (s.u.)	ORP/Eh (MV)	DO (mg/L)	Turb (NTU)	COMMENTS
1046	2.04	200		21.3	0.797	6.32	16	1.57	86.0	
1047	2.04	200	2	21.73	0.776	6.31	16	0.81	23.6	
1050	2.04	200	3	22.14	0.780	6.32	11	0.77	7.2	
1053	2.04	200	5	22.36	0.838	6.33	7	0.76	11.0	
1100	2.04	200	5	22.24	0.919	6.34	5	0.76	9.1	
1105	2.04	200	6	22.00	1.01	6.36	4	0.79	8.6	
1110	2.04	200	7	22.03	1.02	6.34	4	0.80	7.1	
1115	2.04	200	8	21.79	1.02	6.35	3	0.81	6.2	
FINAL FIELD DATA										
pH:	6.34		(S.U.)	DO:	0.74		(mg/L)	COMMENTS:		
SPECIFIC CONDUCTANCE:	21.02		(mS/cm)	TURBIDITY:	538		(NTU)			
TEMPERATURE:	21.80		(°C)	ORP:	3		(MV)			
ODOR AND PHYSICAL APPEARANCE OF SAMPLE: clear, no odor										
WEATHER CONDITIONS: sun, 80°										
WELL CONDITION DATA										
Protective Casing Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Concrete pad present:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Cap on riser:	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Protective Casing Locked:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Standing Water:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Visible Heaving:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Physical Damage:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
If yes, Describe:										
SAMPLER'S SIGNATURE:										

EST - LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME Cummings Beverly
LOCATION Beverly, MA
SAMPLING CREW KJ, BC

PURGING DATA

REFERENCE POINT: PVC Steel Casing 41.20 (FT) PURGING DEVICE: peristaltic pump
DEPTH TO WATER 42.48 (FT) WELL DEPTH 2

FINAL FIELD DATA

pH: 6.06 (S.U.) DO: 1.02 (mg/L) COMMENTS: _____
SPECIFIC CONDUCTANCE: 1.16 (mS/cm) TURBIDITY: 1.02 (NTU)
TEMPERATURE: 20.57 ($^{\circ}$ C) ORP: 100 (MV)

ODOR AND PHYSICAL APPEARANCE OF SAMPLE: Clear, no odor

WEATHER CONDITIONS: Sun, 80°

WELL CONDITION DATA

Protective Casing Present: Y N **Concrete pad present:** Y N
Protective Casing Locked: Y N **Standing Water:** Y N
Physical Damage: Y **Cap on riser:** Y N
If yes, Describe:

SAMPLER'S SIGNATURE: _____

LOW-LOW GROUNDWATER SAMPLING RECORD											
PROJECT NAME	Cummings Beverly					WELL ID	FSL-11				
LOCATION	Beverly, MA					DATE:	6/29/18				
SAMPLING CREW	BC, KJ					SAMPLE TIME:	1345				
PURGING DATA											
REFERENCE POINT: DEPTH TO WATER	PVC	Steel Casing 6.60 (FT)	PURGING DEVICE: WELL DEPTH	Peristaltic Pump					Well Diameter 2		
CLOCK TIME	STATIC DEPTH (FT)	PURGE RATE (ML)	CUM. VOLUME PURGED (L)	TEMP (°C)	SP. COND (mS/cm)	pH (s.u.)	ORP/Eh (MV)	DO (mg/L)	Turb (NTU)	COMMENTS	
1315	6.60	200	1	17.46	12.8	6.17	41	1.45	7.5		
1320	6.60	200	2	17.77	11.8	6.22	36	.95			
1325	6.60	200	3	18.52	10.7	6.27	27	.73	4.8		
1330	6.60	200	4	18.40	10.2	6.28	27	.57	6.4		
1335	6.60	200	5	18.31	10.2	6.24	32	.53	5.90		
1340	6.60	200	6	18.22	10.2	6.24	33	.46	1.9		
FINAL FIELD DATA											
pH:	6.27		(S.U.)	DO:	.46		(mg/L)	COMMENTS: MS/MSD Collected			
SPECIFIC CONDUCTANCE:	10.1		(mS/cm)	TURBIDITY:	1.8		(NTU)				
TEMPERATURE:	18.0		(°C)	ORP:	32		(MV)				
ODOR AND PHYSICAL APPEARANCE OF SAMPLE: Clear, NO ODOR											
WEATHER CONDITIONS: Sun, 80's											
WELL CONDITION DATA											
Protective Casing Present:	<input checked="" type="radio"/>	N	Concrete pad present:	Y	<input checked="" type="radio"/>	N	Cap on riser:	<input checked="" type="radio"/>	N		
Protective Casing Locked:	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Standing Water:	Y	<input checked="" type="radio"/>	N	Visible Heaving:	<input checked="" type="radio"/>	<input checked="" type="radio"/>		
Physical Damage:	<input checked="" type="radio"/>		If yes, Describe:								
SAMPLER'S SIGNATURE:	Blender Cox										

EST - LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME	Cummings Beverly	WELL ID	FSL - 2
LOCATION	Beverly, MA		
SAMPLING CREW	KJ, BC	DATE:	6/29/18
		SAMPLE TIME:	

PURGING DATA

REFERENCE POINT: PVC Steel Casing PURGING DEVICE: peristaltic pump
DEPTH TO WATER 3.65 (FT) WELL DEPTH (FT) Well Diameter 1

FINAL FIELD DATA

pH: _____ (S.U.) DO: _____ (mg/L) COMMENTS: Purged to dryness immediately.
SPECIFIC CONDUCTANCE: _____ (mS/cm) TURBIDITY: _____ (NTU)
TEMPERATURE: _____ ($^{\circ}$ C) ORP: _____ (MV)

ODOR AND PHYSICAL APPEARANCE OF SAMPLE:

Clear, light Odor

COMMENTS: Purged to dryness immediately.

WEATHER CONDITIONS:

WELL CONDITION DATA

Protective Casing Present:

Protective Casing Locked:

Physical Damage

Y

25

Concrete pad present:

Standing Water:

4

N
N

Cap on rises:

Visible Hearing

Y

15

SAMPLER'S SIGNATURE.

EST - LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME Cummings Beverly
LOCATION Beverly, MA
SAMPLING CREW Em

WELL ID FSL-13 Em D
P
PLE TIME: 1145

PURGING DATA

REFERENCE POINT: PVC Steel Casing PURGING DEVICE: Geo-Rmp
DEPTH TO WATER 7.41 (FT) WELL DEPTH 14.83 (FT) Well Diameter 2

FINAL FIELD DATA

pH: 6.19 (S.U.) DO: 0.23 (mg/L) COMMENTS: Collected ms/msd Day
SPECIFIC CONDUCTANCE: 9.335 (mS/cm) TURBIDITY: 40.0 (NTU)
TEMPERATURE: 16.93 ($^{\circ}$ C) ORP: -158.4 (MV)

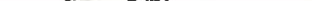
ODOR AND PHYSICAL APPEARANCE OF SAMPLE: *odorless*

WEATHER CONDITIONS:

WELL CONDITION DATA

Protective Casing Present: Y N Protective Casing Locked: Y N
Physical Damage: Y If yes, Describe: _____
Concrete pad present: Y N Standing Water: Y N

Cap on riser:
Visible Heaving:

SAMPLER'S SIGNATURE: 

EST - LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME Cummings Beverly WELL ID BSL-13
LOCATION Beverly, MA
SAMPLING CREW Em DATE: 6-29-18 SAMPLE TIME: 1335

PURGING DATA

REFERENCE POINT

DEPTH TO WATER

PVO

PVC Steel Casing

~~10.53 750~~ (FT)

PURGING DEVICE:

DATE:

10-29-18

WELL ID BL-12

SAMPLE TIME: 1555

FINAL FIELD DATA

pH: 6.39 (S.U.)

SPECIFIC CONDUCTANCE: 5.04 (mS/cm)

TEMPERATURE: 17.42

DO: 0.28 (mg/L)

TURBIDITY: 42.8 (NTU)

COMMENTS

ODOR AND PHYSICAL APPEARANCE OF SAMPLE:

WEATHER CONDITIONS:

WELL CONDITION DATA

Protective Casing Present:

Protective Casing Locked

Physical Damage:

Physical Damage

Concrete pad present:

Standing Water:

N

**Cap on riser:
Visible Heaving**

A diagram consisting of two separate ovals. The left oval contains the letter 'Y' at its bottom. The right oval contains the letter 'N' at its top, with a small arrow pointing towards the letter.

SAMPLER'S SIGNATURE:

EST - LOW FLOW GROUNDWATER SAMPLING RECORD

PROJECT NAME	Cummings Beverly	WELL ID	F22-15
LOCATION	Beverly, MA		
SAMPLING CREW		DATE:	6-29
		SAMPLE TIME:	1530

PURGING DATA

REFERENCE POINT: PVC Steel Casing PURGING DEVICE: geopump
DEPTH TO WATER 317 (FT) WELL DEPTH (FT) Well Diameter 2

FINAL FIELD DATA

pH: 6.47 (S.U.) DO: 0.28 (mg/L)
SPECIFIC CONDUCTANCE: 70.79 (mS/cm) TURBIDITY: 3.99 (NTU)
TEMPERATURE: 15.99 ($^{\circ}$ C) ORP: 137 (MV)

COMMENTS:

ODOR AND PHYSICAL APPEARANCE OF SAMPLE:

Clear, no odor

WEATHER CONDITIONS:

Clear, 40's

WELL CONDITION DATA

Y N

Concrete pad present:

Y N

**Cap on riser:
Visible Heaving:**

Y N

Protective Casing

Protective Casing Locked:

Physical Damage:

If yes, Describe:

SAMPLER'S SIGNATURE:

S. M. M.

APPENDIX B

GROUNDWATER ANALYTICAL ANALYSIS RESULTS



ANALYTICAL REPORT

Lab Number:	L1824997
Client:	FSL Associates 358 Chestnut Hill Ave. Brighton, MA 02135
ATTN:	Bruce Hoskins
Phone:	(617) 232-0001
Project Name:	CUMMINGS BEVERLY
Project Number:	Not Specified
Report Date:	07/16/18

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1824997-01	FSL-4	WATER	BEVERLY, MA	06/29/18 09:20	06/29/18
L1824997-02	FSL-5	WATER	BEVERLY, MA	06/29/18 10:20	06/29/18
L1824997-03	FSL-6	WATER	BEVERLY, MA	06/29/18 11:20	06/29/18
L1824997-04	FSL-7	WATER	BEVERLY, MA	06/29/18 12:45	06/29/18
L1824997-05	FSL-11	WATER	BEVERLY, MA	06/29/18 13:45	06/29/18
L1824997-06	DUPLICATE	WATER	BEVERLY, MA	06/29/18 09:20	06/29/18
L1824997-07	FSL-1	WATER	BEVERLY, MA	06/29/18 09:30	06/29/18
L1824997-08	FSL-12	WATER	BEVERLY, MA	06/29/18 11:45	06/29/18
L1824997-09	DUPLICATE	WATER	BEVERLY, MA	06/29/18 11:45	06/29/18
L1824997-10	FSL-13	WATER	BEVERLY, MA	06/29/18 13:35	06/29/18
L1824997-11	FSL-14	WATER	BEVERLY, MA	06/29/18 10:25	06/29/18
L1824997-12	FSL-15	WATER	BEVERLY, MA	06/29/18 15:30	06/29/18
L1824997-15	TRIP BLANK	WATER	BEVERLY, MA	06/29/18 00:00	06/29/18
L1824997-16	FIELD BLANK	WATER	BEVERLY, MA	06/29/18 00:00	06/29/18

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	YES
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	NO
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	YES

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.



Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
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Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Case Narrative (continued)

MCP Related Narratives

Sample Receipt

L1824997-15: A sample identified as "TRIP BLANK" was received but not listed on the Chain of Custody. This sample was not analyzed.

L1824997-16: A sample identified as "FIELD BLANK" was received but not listed on the Chain of Custody. This sample was not analyzed.

Volatile Organics

L1824997-08 and -09: The sample has elevated detection limits due to the dilution required by the sample matrix (foam).

In reference to question G:

L1824997-04, -08 and -09: One or more of the target analytes did not achieve the requested CAM reporting limits.

In reference to question H:

The initial calibration, associated with L1824997-01, -03, -05, -06, -08 and -09, did not meet the method required minimum response factor on the lowest calibration standard for 1,4-dioxane (0.0025), as well as the average response factor for 1,4-dioxane.

The initial calibration, associated with L1824997-04, did not meet the method required minimum response factor on the lowest calibration standard for 1,4-dioxane (0.0026), as well as the average response factor for 1,4-dioxane.

The continuing calibration standards, associated with L1824997-01, -03, -04, -05, -06, -08 and -09, are outside the acceptance criteria for several compounds; however, they are within overall method allowances. A copy of the continuing calibration standards is included as an addendum to this report.

EPH

In reference to question H:

L1824997-02: The surrogate recoveries were outside the acceptance criteria for chloro-octadecane (13%), o-terphenyl (13%) and o-terphenyl-ms (20%); however, re-extraction achieved similar results: chloro-

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Case Narrative (continued)

octadecane (10%), o-terphenyl (24%) and o-terphenyl-ms (23%). The results of both extractions are reported; however, all associated compounds are considered to have a potential bias.

L1824997-09: The surrogate recoveries were outside the acceptance criteria for o-terphenyl (32%), 2-fluorobiphenyl (38%) and 2-bromonaphthalene (39%); however, re-extraction achieved similar results: 1-Chlorooctadecane (37%). The results of both extractions are reported; however, all associated compounds are considered to have a potential bias.

The WG1132583-1 Method Blank, associated with -01 through -06, -08 through -11, has concentrations above the reporting limits for Naphthalene and 2-methylNaphthalene; however, re-extraction could not be performed on -01, -03 through -06, -08, -10 and -11 due to lack of additional sample volume. The results of the original analyses are reported and are qualified with a "B".

The WG1133504-2 LCS recoveries, associated with L1824997-12, are above the acceptance criteria for pyrene (144%), benzo(a)pyrene (142%), indeno(1,2,3-cd)pyrene (142%) and dibenzo(a,h)anthracene (142%); however, the associated sample is non-detect to the RL for these target analytes. The results of the original analysis are reported.

The surrogate recovery for the WG1132583-5 MSD, performed on L1824997-05, is outside the acceptance criteria for o-terphenyl-ms (157%). The associated MSD spike compounds are within overall method allowances; therefore, no further action was taken.

VPH

In reference to question G:

L1824997-04: One or more of the target analytes did not achieve the requested CAM reporting limits.

Non-MCP Related Narratives

PCB Homologs

L1824997-02: The surrogate recoveries were outside the acceptance criteria for cl3-bz#19-c13 (44%) and cl8-bz#202-c13 (42%); however, the criteria was achieved upon re-extraction outside of holding time. The results of both extractions are reported; however, all associated compounds are considered to have a potential bias.

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Project Number: Not Specified

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Report Date: 07/16/18

Case Narrative (continued)

L1824997-08: The surrogate recoveries were outside the acceptance criteria for cl3-bz#19-c13 (49%) and cl8-bz#202-c13 (45%); however, re-extraction outside of holding time achieved similar results: cl3-bz#19-c13 (30%) and cl8-bz#202-c13 (25%). The results of both extractions are reported; however, all associated compounds are considered to have a potential bias.

The WG1133237-1 Method Blank, associated with L1824997-01, -02, -05 through -11, has a concentration above the reporting limit for several homolog groups. Since samples L1824997-01, -05, -06, -07, -08, -09, -11 were non-detect to the RL for these target analytes, no further actions were taken. The results of the original analysis are reported. Samples L1824997-02 and -10 were re-extracted outside of holding time; the results of both extractions are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Michelle M. Morris

Title: Technical Director/Representative

Date: 07/16/18

ORGANICS



VOLATILES



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-01
 Client ID: FSL-4
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 09:20
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 97,8260C
 Analytical Date: 07/03/18 10:54
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND	ug/l	2.0	--	--	1
1,1-Dichloroethane	ND	ug/l	1.0	--	--	1
Chloroform	ND	ug/l	1.0	--	--	1
Carbon tetrachloride	ND	ug/l	1.0	--	--	1
1,2-Dichloropropane	ND	ug/l	1.0	--	--	1
Dibromochloromethane	ND	ug/l	1.0	--	--	1
1,1,2-Trichloroethane	ND	ug/l	1.0	--	--	1
Tetrachloroethene	ND	ug/l	1.0	--	--	1
Chlorobenzene	ND	ug/l	1.0	--	--	1
Trichlorofluoromethane	ND	ug/l	2.0	--	--	1
1,2-Dichloroethane	ND	ug/l	1.0	--	--	1
1,1,1-Trichloroethane	ND	ug/l	1.0	--	--	1
Bromodichloromethane	ND	ug/l	1.0	--	--	1
trans-1,3-Dichloropropene	ND	ug/l	0.40	--	--	1
cis-1,3-Dichloropropene	ND	ug/l	0.40	--	--	1
1,3-Dichloropropene, Total	ND	ug/l	0.40	--	--	1
1,1-Dichloropropene	ND	ug/l	2.0	--	--	1
Bromoform	ND	ug/l	2.0	--	--	1
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0	--	--	1
Benzene	ND	ug/l	0.50	--	--	1
Toluene	ND	ug/l	1.0	--	--	1
Ethylbenzene	ND	ug/l	1.0	--	--	1
Chloromethane	ND	ug/l	2.0	--	--	1
Bromomethane	ND	ug/l	2.0	--	--	1
Vinyl chloride	ND	ug/l	1.0	--	--	1
Chloroethane	ND	ug/l	2.0	--	--	1
1,1-Dichloroethene	ND	ug/l	1.0	--	--	1
trans-1,2-Dichloroethene	ND	ug/l	1.0	--	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-01	Date Collected:	06/29/18 09:20
Client ID:	FSL-4	Date Received:	06/29/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Trichloroethene	ND	ug/l	1.0	--	--	1
1,2-Dichlorobenzene	ND	ug/l	1.0	--	--	1
1,3-Dichlorobenzene	ND	ug/l	1.0	--	--	1
1,4-Dichlorobenzene	ND	ug/l	1.0	--	--	1
Methyl tert butyl ether	ND	ug/l	2.0	--	--	1
p/m-Xylene	ND	ug/l	2.0	--	--	1
o-Xylene	ND	ug/l	1.0	--	--	1
Xylene (Total)	ND	ug/l	1.0	--	--	1
cis-1,2-Dichloroethene	ND	ug/l	1.0	--	--	1
1,2-Dichloroethene (total)	ND	ug/l	1.0	--	--	1
Dibromomethane	ND	ug/l	2.0	--	--	1
1,2,3-Trichloropropane	ND	ug/l	2.0	--	--	1
Styrene	ND	ug/l	1.0	--	--	1
Dichlorodifluoromethane	ND	ug/l	2.0	--	--	1
Acetone	ND	ug/l	5.0	--	--	1
Carbon disulfide	ND	ug/l	2.0	--	--	1
2-Butanone	ND	ug/l	5.0	--	--	1
4-Methyl-2-pentanone	ND	ug/l	5.0	--	--	1
2-Hexanone	ND	ug/l	5.0	--	--	1
Bromochloromethane	ND	ug/l	2.0	--	--	1
Tetrahydrofuran	ND	ug/l	2.0	--	--	1
2,2-Dichloropropane	ND	ug/l	2.0	--	--	1
1,2-Dibromoethane	ND	ug/l	2.0	--	--	1
1,3-Dichloropropane	ND	ug/l	2.0	--	--	1
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0	--	--	1
Bromobenzene	ND	ug/l	2.0	--	--	1
n-Butylbenzene	ND	ug/l	2.0	--	--	1
sec-Butylbenzene	ND	ug/l	2.0	--	--	1
tert-Butylbenzene	ND	ug/l	2.0	--	--	1
o-Chlorotoluene	ND	ug/l	2.0	--	--	1
p-Chlorotoluene	ND	ug/l	2.0	--	--	1
1,2-Dibromo-3-chloropropane	ND	ug/l	2.0	--	--	1
Hexachlorobutadiene	ND	ug/l	0.60	--	--	1
Isopropylbenzene	ND	ug/l	2.0	--	--	1
p-Isopropyltoluene	ND	ug/l	2.0	--	--	1
Naphthalene	ND	ug/l	2.0	--	--	1
n-Propylbenzene	ND	ug/l	2.0	--	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-01

Date Collected: 06/29/18 09:20

Client ID: FSL-4

Date Received: 06/29/18

Sample Location: BEVERLY, MA

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Ethyl ether	ND		ug/l	2.0	--	1
Isopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	109		70-130

Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-03
 Client ID: FSL-6
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 11:20
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 97,8260C
 Analytical Date: 07/03/18 11:28
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND	ug/l	2.0	--	--	1
1,1-Dichloroethane	ND	ug/l	1.0	--	--	1
Chloroform	ND	ug/l	1.0	--	--	1
Carbon tetrachloride	ND	ug/l	1.0	--	--	1
1,2-Dichloropropane	ND	ug/l	1.0	--	--	1
Dibromochloromethane	ND	ug/l	1.0	--	--	1
1,1,2-Trichloroethane	ND	ug/l	1.0	--	--	1
Tetrachloroethene	ND	ug/l	1.0	--	--	1
Chlorobenzene	ND	ug/l	1.0	--	--	1
Trichlorofluoromethane	ND	ug/l	2.0	--	--	1
1,2-Dichloroethane	ND	ug/l	1.0	--	--	1
1,1,1-Trichloroethane	ND	ug/l	1.0	--	--	1
Bromodichloromethane	ND	ug/l	1.0	--	--	1
trans-1,3-Dichloropropene	ND	ug/l	0.40	--	--	1
cis-1,3-Dichloropropene	ND	ug/l	0.40	--	--	1
1,3-Dichloropropene, Total	ND	ug/l	0.40	--	--	1
1,1-Dichloropropene	ND	ug/l	2.0	--	--	1
Bromoform	ND	ug/l	2.0	--	--	1
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0	--	--	1
Benzene	ND	ug/l	0.50	--	--	1
Toluene	ND	ug/l	1.0	--	--	1
Ethylbenzene	ND	ug/l	1.0	--	--	1
Chloromethane	ND	ug/l	2.0	--	--	1
Bromomethane	ND	ug/l	2.0	--	--	1
Vinyl chloride	ND	ug/l	1.0	--	--	1
Chloroethane	ND	ug/l	2.0	--	--	1
1,1-Dichloroethene	ND	ug/l	1.0	--	--	1
trans-1,2-Dichloroethene	ND	ug/l	1.0	--	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-03	Date Collected:	06/29/18 11:20
Client ID:	FSL-6	Date Received:	06/29/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Trichloroethene	ND	ug/l	1.0	--	--	1
1,2-Dichlorobenzene	ND	ug/l	1.0	--	--	1
1,3-Dichlorobenzene	ND	ug/l	1.0	--	--	1
1,4-Dichlorobenzene	ND	ug/l	1.0	--	--	1
Methyl tert butyl ether	ND	ug/l	2.0	--	--	1
p/m-Xylene	ND	ug/l	2.0	--	--	1
o-Xylene	ND	ug/l	1.0	--	--	1
Xylene (Total)	ND	ug/l	1.0	--	--	1
cis-1,2-Dichloroethene	ND	ug/l	1.0	--	--	1
1,2-Dichloroethene (total)	ND	ug/l	1.0	--	--	1
Dibromomethane	ND	ug/l	2.0	--	--	1
1,2,3-Trichloropropane	ND	ug/l	2.0	--	--	1
Styrene	ND	ug/l	1.0	--	--	1
Dichlorodifluoromethane	ND	ug/l	2.0	--	--	1
Acetone	ND	ug/l	5.0	--	--	1
Carbon disulfide	ND	ug/l	2.0	--	--	1
2-Butanone	ND	ug/l	5.0	--	--	1
4-Methyl-2-pentanone	ND	ug/l	5.0	--	--	1
2-Hexanone	ND	ug/l	5.0	--	--	1
Bromochloromethane	ND	ug/l	2.0	--	--	1
Tetrahydrofuran	ND	ug/l	2.0	--	--	1
2,2-Dichloropropane	ND	ug/l	2.0	--	--	1
1,2-Dibromoethane	ND	ug/l	2.0	--	--	1
1,3-Dichloropropane	ND	ug/l	2.0	--	--	1
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0	--	--	1
Bromobenzene	ND	ug/l	2.0	--	--	1
n-Butylbenzene	ND	ug/l	2.0	--	--	1
sec-Butylbenzene	ND	ug/l	2.0	--	--	1
tert-Butylbenzene	ND	ug/l	2.0	--	--	1
o-Chlorotoluene	ND	ug/l	2.0	--	--	1
p-Chlorotoluene	ND	ug/l	2.0	--	--	1
1,2-Dibromo-3-chloropropane	ND	ug/l	2.0	--	--	1
Hexachlorobutadiene	ND	ug/l	0.60	--	--	1
Isopropylbenzene	ND	ug/l	2.0	--	--	1
p-Isopropyltoluene	ND	ug/l	2.0	--	--	1
Naphthalene	ND	ug/l	2.0	--	--	1
n-Propylbenzene	ND	ug/l	2.0	--	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-03	Date Collected:	06/29/18 11:20
Client ID:	FSL-6	Date Received:	06/29/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Ethyl ether	ND		ug/l	2.0	--	1
Isopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	107		70-130

Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-04	D	Date Collected:	06/29/18 12:45
Client ID:	FSL-7		Date Received:	06/29/18
Sample Location:	BEVERLY, MA		Field Prep:	Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 97,8260C

Analytical Date: 07/03/18 10:38

Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND	ug/l	400	--	200	
1,1-Dichloroethane	ND	ug/l	200	--	200	
Chloroform	ND	ug/l	200	--	200	
Carbon tetrachloride	ND	ug/l	200	--	200	
1,2-Dichloropropane	ND	ug/l	200	--	200	
Dibromochloromethane	ND	ug/l	200	--	200	
1,1,2-Trichloroethane	ND	ug/l	200	--	200	
Tetrachloroethene	ND	ug/l	200	--	200	
Chlorobenzene	ND	ug/l	200	--	200	
Trichlorofluoromethane	ND	ug/l	400	--	200	
1,2-Dichloroethane	ND	ug/l	200	--	200	
1,1,1-Trichloroethane	ND	ug/l	200	--	200	
Bromodichloromethane	ND	ug/l	200	--	200	
trans-1,3-Dichloropropene	ND	ug/l	80	--	200	
cis-1,3-Dichloropropene	ND	ug/l	80	--	200	
1,3-Dichloropropene, Total	ND	ug/l	80	--	200	
1,1-Dichloropropene	ND	ug/l	400	--	200	
Bromoform	ND	ug/l	400	--	200	
1,1,2,2-Tetrachloroethane	ND	ug/l	200	--	200	
Benzene	ND	ug/l	100	--	200	
Toluene	ND	ug/l	200	--	200	
Ethylbenzene	31000	ug/l	200	--	200	
Chloromethane	ND	ug/l	400	--	200	
Bromomethane	ND	ug/l	400	--	200	
Vinyl chloride	ND	ug/l	200	--	200	
Chloroethane	ND	ug/l	400	--	200	
1,1-Dichloroethene	ND	ug/l	200	--	200	
trans-1,2-Dichloroethene	ND	ug/l	200	--	200	



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-04	D	Date Collected:	06/29/18 12:45
Client ID:	FSL-7		Date Received:	06/29/18
Sample Location:	BEVERLY, MA		Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Trichloroethene	ND	ug/l	200	--	200	
1,2-Dichlorobenzene	ND	ug/l	200	--	200	
1,3-Dichlorobenzene	ND	ug/l	200	--	200	
1,4-Dichlorobenzene	ND	ug/l	200	--	200	
Methyl tert butyl ether	ND	ug/l	400	--	200	
p/m-Xylene	40000	ug/l	400	--	200	
o-Xylene	320	ug/l	200	--	200	
Xylene (Total)	40000	ug/l	200	--	200	
cis-1,2-Dichloroethene	1600	ug/l	200	--	200	
1,2-Dichloroethene (total)	1600	ug/l	200	--	200	
Dibromomethane	ND	ug/l	400	--	200	
1,2,3-Trichloropropane	ND	ug/l	400	--	200	
Styrene	ND	ug/l	200	--	200	
Dichlorodifluoromethane	ND	ug/l	400	--	200	
Acetone	ND	ug/l	1000	--	200	
Carbon disulfide	ND	ug/l	400	--	200	
2-Butanone	ND	ug/l	1000	--	200	
4-Methyl-2-pentanone	ND	ug/l	1000	--	200	
2-Hexanone	ND	ug/l	1000	--	200	
Bromochloromethane	ND	ug/l	400	--	200	
Tetrahydrofuran	ND	ug/l	400	--	200	
2,2-Dichloropropane	ND	ug/l	400	--	200	
1,2-Dibromoethane	ND	ug/l	400	--	200	
1,3-Dichloropropane	ND	ug/l	400	--	200	
1,1,1,2-Tetrachloroethane	ND	ug/l	200	--	200	
Bromobenzene	ND	ug/l	400	--	200	
n-Butylbenzene	ND	ug/l	400	--	200	
sec-Butylbenzene	ND	ug/l	400	--	200	
tert-Butylbenzene	ND	ug/l	400	--	200	
o-Chlorotoluene	ND	ug/l	400	--	200	
p-Chlorotoluene	ND	ug/l	400	--	200	
1,2-Dibromo-3-chloropropane	ND	ug/l	400	--	200	
Hexachlorobutadiene	ND	ug/l	120	--	200	
Isopropylbenzene	ND	ug/l	400	--	200	
p-Isopropyltoluene	ND	ug/l	400	--	200	
Naphthalene	ND	ug/l	400	--	200	
n-Propylbenzene	ND	ug/l	400	--	200	



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-04	D	Date Collected:	06/29/18 12:45
Client ID:	FSL-7		Date Received:	06/29/18
Sample Location:	BEVERLY, MA		Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2,3-Trichlorobenzene	ND	ug/l	400	--	200	
1,2,4-Trichlorobenzene	ND	ug/l	400	--	200	
1,3,5-Trimethylbenzene	ND	ug/l	400	--	200	
1,2,4-Trimethylbenzene	ND	ug/l	400	--	200	
Ethyl ether	ND	ug/l	400	--	200	
Isopropyl Ether	ND	ug/l	400	--	200	
Ethyl-Tert-Butyl-Ether	ND	ug/l	400	--	200	
Tertiary-Amyl Methyl Ether	ND	ug/l	400	--	200	
1,4-Dioxane	ND	ug/l	50000	--	200	

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	106		70-130

Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-05
 Client ID: FSL-11
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 13:45
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 97,8260C
 Analytical Date: 07/03/18 12:01
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND	ug/l	2.0	--	--	1
1,1-Dichloroethane	ND	ug/l	1.0	--	--	1
Chloroform	ND	ug/l	1.0	--	--	1
Carbon tetrachloride	ND	ug/l	1.0	--	--	1
1,2-Dichloropropane	ND	ug/l	1.0	--	--	1
Dibromochloromethane	ND	ug/l	1.0	--	--	1
1,1,2-Trichloroethane	ND	ug/l	1.0	--	--	1
Tetrachloroethene	ND	ug/l	1.0	--	--	1
Chlorobenzene	ND	ug/l	1.0	--	--	1
Trichlorofluoromethane	ND	ug/l	2.0	--	--	1
1,2-Dichloroethane	ND	ug/l	1.0	--	--	1
1,1,1-Trichloroethane	ND	ug/l	1.0	--	--	1
Bromodichloromethane	ND	ug/l	1.0	--	--	1
trans-1,3-Dichloropropene	ND	ug/l	0.40	--	--	1
cis-1,3-Dichloropropene	ND	ug/l	0.40	--	--	1
1,3-Dichloropropene, Total	ND	ug/l	0.40	--	--	1
1,1-Dichloropropene	ND	ug/l	2.0	--	--	1
Bromoform	ND	ug/l	2.0	--	--	1
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0	--	--	1
Benzene	ND	ug/l	0.50	--	--	1
Toluene	ND	ug/l	1.0	--	--	1
Ethylbenzene	1.8	ug/l	1.0	--	--	1
Chloromethane	ND	ug/l	2.0	--	--	1
Bromomethane	ND	ug/l	2.0	--	--	1
Vinyl chloride	ND	ug/l	1.0	--	--	1
Chloroethane	ND	ug/l	2.0	--	--	1
1,1-Dichloroethene	ND	ug/l	1.0	--	--	1
trans-1,2-Dichloroethene	ND	ug/l	1.0	--	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-05	Date Collected:	06/29/18 13:45
Client ID:	FSL-11	Date Received:	06/29/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Trichloroethene	ND	ug/l	1.0	--	--	1
1,2-Dichlorobenzene	ND	ug/l	1.0	--	--	1
1,3-Dichlorobenzene	ND	ug/l	1.0	--	--	1
1,4-Dichlorobenzene	ND	ug/l	1.0	--	--	1
Methyl tert butyl ether	ND	ug/l	2.0	--	--	1
p/m-Xylene	2.3	ug/l	2.0	--	--	1
o-Xylene	ND	ug/l	1.0	--	--	1
Xylene (Total)	2.3	ug/l	1.0	--	--	1
cis-1,2-Dichloroethene	ND	ug/l	1.0	--	--	1
1,2-Dichloroethene (total)	ND	ug/l	1.0	--	--	1
Dibromomethane	ND	ug/l	2.0	--	--	1
1,2,3-Trichloropropane	ND	ug/l	2.0	--	--	1
Styrene	ND	ug/l	1.0	--	--	1
Dichlorodifluoromethane	ND	ug/l	2.0	--	--	1
Acetone	6.2	ug/l	5.0	--	--	1
Carbon disulfide	ND	ug/l	2.0	--	--	1
2-Butanone	ND	ug/l	5.0	--	--	1
4-Methyl-2-pentanone	ND	ug/l	5.0	--	--	1
2-Hexanone	ND	ug/l	5.0	--	--	1
Bromochloromethane	ND	ug/l	2.0	--	--	1
Tetrahydrofuran	ND	ug/l	2.0	--	--	1
2,2-Dichloropropane	ND	ug/l	2.0	--	--	1
1,2-Dibromoethane	ND	ug/l	2.0	--	--	1
1,3-Dichloropropane	ND	ug/l	2.0	--	--	1
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0	--	--	1
Bromobenzene	ND	ug/l	2.0	--	--	1
n-Butylbenzene	ND	ug/l	2.0	--	--	1
sec-Butylbenzene	ND	ug/l	2.0	--	--	1
tert-Butylbenzene	ND	ug/l	2.0	--	--	1
o-Chlorotoluene	ND	ug/l	2.0	--	--	1
p-Chlorotoluene	ND	ug/l	2.0	--	--	1
1,2-Dibromo-3-chloropropane	ND	ug/l	2.0	--	--	1
Hexachlorobutadiene	ND	ug/l	0.60	--	--	1
Isopropylbenzene	ND	ug/l	2.0	--	--	1
p-Isopropyltoluene	ND	ug/l	2.0	--	--	1
Naphthalene	ND	ug/l	2.0	--	--	1
n-Propylbenzene	ND	ug/l	2.0	--	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-05	Date Collected:	06/29/18 13:45
Client ID:	FSL-11	Date Received:	06/29/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Ethyl ether	ND		ug/l	2.0	--	1
Isopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	108		70-130

Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-06
 Client ID: DUPLICATE
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 09:20
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 97,8260C
 Analytical Date: 07/03/18 12:35
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND	ug/l	2.0	--	--	1
1,1-Dichloroethane	ND	ug/l	1.0	--	--	1
Chloroform	ND	ug/l	1.0	--	--	1
Carbon tetrachloride	ND	ug/l	1.0	--	--	1
1,2-Dichloropropane	ND	ug/l	1.0	--	--	1
Dibromochloromethane	ND	ug/l	1.0	--	--	1
1,1,2-Trichloroethane	ND	ug/l	1.0	--	--	1
Tetrachloroethene	ND	ug/l	1.0	--	--	1
Chlorobenzene	ND	ug/l	1.0	--	--	1
Trichlorofluoromethane	ND	ug/l	2.0	--	--	1
1,2-Dichloroethane	ND	ug/l	1.0	--	--	1
1,1,1-Trichloroethane	ND	ug/l	1.0	--	--	1
Bromodichloromethane	ND	ug/l	1.0	--	--	1
trans-1,3-Dichloropropene	ND	ug/l	0.40	--	--	1
cis-1,3-Dichloropropene	ND	ug/l	0.40	--	--	1
1,3-Dichloropropene, Total	ND	ug/l	0.40	--	--	1
1,1-Dichloropropene	ND	ug/l	2.0	--	--	1
Bromoform	ND	ug/l	2.0	--	--	1
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0	--	--	1
Benzene	ND	ug/l	0.50	--	--	1
Toluene	ND	ug/l	1.0	--	--	1
Ethylbenzene	ND	ug/l	1.0	--	--	1
Chloromethane	ND	ug/l	2.0	--	--	1
Bromomethane	ND	ug/l	2.0	--	--	1
Vinyl chloride	ND	ug/l	1.0	--	--	1
Chloroethane	ND	ug/l	2.0	--	--	1
1,1-Dichloroethene	ND	ug/l	1.0	--	--	1
trans-1,2-Dichloroethene	ND	ug/l	1.0	--	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-06	Date Collected:	06/29/18 09:20
Client ID:	DUPLICATE	Date Received:	06/29/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Trichloroethene	ND	ug/l	1.0	--	--	1
1,2-Dichlorobenzene	ND	ug/l	1.0	--	--	1
1,3-Dichlorobenzene	ND	ug/l	1.0	--	--	1
1,4-Dichlorobenzene	ND	ug/l	1.0	--	--	1
Methyl tert butyl ether	ND	ug/l	2.0	--	--	1
p/m-Xylene	ND	ug/l	2.0	--	--	1
o-Xylene	ND	ug/l	1.0	--	--	1
Xylene (Total)	ND	ug/l	1.0	--	--	1
cis-1,2-Dichloroethene	ND	ug/l	1.0	--	--	1
1,2-Dichloroethene (total)	ND	ug/l	1.0	--	--	1
Dibromomethane	ND	ug/l	2.0	--	--	1
1,2,3-Trichloropropane	ND	ug/l	2.0	--	--	1
Styrene	ND	ug/l	1.0	--	--	1
Dichlorodifluoromethane	ND	ug/l	2.0	--	--	1
Acetone	ND	ug/l	5.0	--	--	1
Carbon disulfide	ND	ug/l	2.0	--	--	1
2-Butanone	ND	ug/l	5.0	--	--	1
4-Methyl-2-pentanone	ND	ug/l	5.0	--	--	1
2-Hexanone	ND	ug/l	5.0	--	--	1
Bromochloromethane	ND	ug/l	2.0	--	--	1
Tetrahydrofuran	ND	ug/l	2.0	--	--	1
2,2-Dichloropropane	ND	ug/l	2.0	--	--	1
1,2-Dibromoethane	ND	ug/l	2.0	--	--	1
1,3-Dichloropropane	ND	ug/l	2.0	--	--	1
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0	--	--	1
Bromobenzene	ND	ug/l	2.0	--	--	1
n-Butylbenzene	ND	ug/l	2.0	--	--	1
sec-Butylbenzene	ND	ug/l	2.0	--	--	1
tert-Butylbenzene	ND	ug/l	2.0	--	--	1
o-Chlorotoluene	ND	ug/l	2.0	--	--	1
p-Chlorotoluene	ND	ug/l	2.0	--	--	1
1,2-Dibromo-3-chloropropane	ND	ug/l	2.0	--	--	1
Hexachlorobutadiene	ND	ug/l	0.60	--	--	1
Isopropylbenzene	ND	ug/l	2.0	--	--	1
p-Isopropyltoluene	ND	ug/l	2.0	--	--	1
Naphthalene	ND	ug/l	2.0	--	--	1
n-Propylbenzene	ND	ug/l	2.0	--	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-06	Date Collected:	06/29/18 09:20
Client ID:	DUPLICATE	Date Received:	06/29/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Ethyl ether	ND		ug/l	2.0	--	1
Isopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	105		70-130

Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-08	D	Date Collected:	06/29/18 11:45
Client ID:	FSL-12		Date Received:	06/29/18
Sample Location:	BEVERLY, MA		Field Prep:	Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 97,8260C

Analytical Date: 07/03/18 13:08

Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND	ug/l	20	--	10	
1,1-Dichloroethane	ND	ug/l	10	--	10	
Chloroform	ND	ug/l	10	--	10	
Carbon tetrachloride	ND	ug/l	10	--	10	
1,2-Dichloropropane	ND	ug/l	10	--	10	
Dibromochloromethane	ND	ug/l	10	--	10	
1,1,2-Trichloroethane	ND	ug/l	10	--	10	
Tetrachloroethene	ND	ug/l	10	--	10	
Chlorobenzene	ND	ug/l	10	--	10	
Trichlorofluoromethane	ND	ug/l	20	--	10	
1,2-Dichloroethane	ND	ug/l	10	--	10	
1,1,1-Trichloroethane	ND	ug/l	10	--	10	
Bromodichloromethane	ND	ug/l	10	--	10	
trans-1,3-Dichloropropene	ND	ug/l	4.0	--	10	
cis-1,3-Dichloropropene	ND	ug/l	4.0	--	10	
1,3-Dichloropropene, Total	ND	ug/l	4.0	--	10	
1,1-Dichloropropene	ND	ug/l	20	--	10	
Bromoform	ND	ug/l	20	--	10	
1,1,2,2-Tetrachloroethane	ND	ug/l	10	--	10	
Benzene	ND	ug/l	5.0	--	10	
Toluene	ND	ug/l	10	--	10	
Ethylbenzene	ND	ug/l	10	--	10	
Chloromethane	ND	ug/l	20	--	10	
Bromomethane	ND	ug/l	20	--	10	
Vinyl chloride	ND	ug/l	10	--	10	
Chloroethane	ND	ug/l	20	--	10	
1,1-Dichloroethene	ND	ug/l	10	--	10	
trans-1,2-Dichloroethene	ND	ug/l	10	--	10	



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-08	D	Date Collected:	06/29/18 11:45
Client ID:	FSL-12		Date Received:	06/29/18
Sample Location:	BEVERLY, MA		Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Trichloroethene	ND	ug/l	10	--	--	10
1,2-Dichlorobenzene	ND	ug/l	10	--	--	10
1,3-Dichlorobenzene	ND	ug/l	10	--	--	10
1,4-Dichlorobenzene	ND	ug/l	10	--	--	10
Methyl tert butyl ether	ND	ug/l	20	--	--	10
p/m-Xylene	ND	ug/l	20	--	--	10
o-Xylene	ND	ug/l	10	--	--	10
Xylene (Total)	ND	ug/l	10	--	--	10
cis-1,2-Dichloroethene	ND	ug/l	10	--	--	10
1,2-Dichloroethene (total)	ND	ug/l	10	--	--	10
Dibromomethane	ND	ug/l	20	--	--	10
1,2,3-Trichloropropane	ND	ug/l	20	--	--	10
Styrene	ND	ug/l	10	--	--	10
Dichlorodifluoromethane	ND	ug/l	20	--	--	10
Acetone	ND	ug/l	50	--	--	10
Carbon disulfide	ND	ug/l	20	--	--	10
2-Butanone	ND	ug/l	50	--	--	10
4-Methyl-2-pentanone	ND	ug/l	50	--	--	10
2-Hexanone	ND	ug/l	50	--	--	10
Bromochloromethane	ND	ug/l	20	--	--	10
Tetrahydrofuran	ND	ug/l	20	--	--	10
2,2-Dichloropropane	ND	ug/l	20	--	--	10
1,2-Dibromoethane	ND	ug/l	20	--	--	10
1,3-Dichloropropane	ND	ug/l	20	--	--	10
1,1,1,2-Tetrachloroethane	ND	ug/l	10	--	--	10
Bromobenzene	ND	ug/l	20	--	--	10
n-Butylbenzene	ND	ug/l	20	--	--	10
sec-Butylbenzene	ND	ug/l	20	--	--	10
tert-Butylbenzene	ND	ug/l	20	--	--	10
o-Chlorotoluene	ND	ug/l	20	--	--	10
p-Chlorotoluene	ND	ug/l	20	--	--	10
1,2-Dibromo-3-chloropropane	ND	ug/l	20	--	--	10
Hexachlorobutadiene	ND	ug/l	6.0	--	--	10
Isopropylbenzene	ND	ug/l	20	--	--	10
p-Isopropyltoluene	ND	ug/l	20	--	--	10
Naphthalene	ND	ug/l	20	--	--	10
n-Propylbenzene	ND	ug/l	20	--	--	10



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-08	D	Date Collected:	06/29/18 11:45
Client ID:	FSL-12		Date Received:	06/29/18
Sample Location:	BEVERLY, MA		Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	20	--	10
1,2,4-Trichlorobenzene	ND		ug/l	20	--	10
1,3,5-Trimethylbenzene	ND		ug/l	20	--	10
1,2,4-Trimethylbenzene	ND		ug/l	20	--	10
Ethyl ether	ND		ug/l	20	--	10
Isopropyl Ether	ND		ug/l	20	--	10
Ethyl-Tert-Butyl-Ether	ND		ug/l	20	--	10
Tertiary-Amyl Methyl Ether	ND		ug/l	20	--	10
1,4-Dioxane	ND		ug/l	2500	--	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	109		70-130

Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-09	D	Date Collected:	06/29/18 11:45
Client ID:	DUPLICATE		Date Received:	06/29/18
Sample Location:	BEVERLY, MA		Field Prep:	Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 97,8260C

Analytical Date: 07/03/18 13:42

Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND	ug/l	20	--	10	
1,1-Dichloroethane	ND	ug/l	10	--	10	
Chloroform	ND	ug/l	10	--	10	
Carbon tetrachloride	ND	ug/l	10	--	10	
1,2-Dichloropropane	ND	ug/l	10	--	10	
Dibromochloromethane	ND	ug/l	10	--	10	
1,1,2-Trichloroethane	ND	ug/l	10	--	10	
Tetrachloroethene	ND	ug/l	10	--	10	
Chlorobenzene	ND	ug/l	10	--	10	
Trichlorofluoromethane	ND	ug/l	20	--	10	
1,2-Dichloroethane	ND	ug/l	10	--	10	
1,1,1-Trichloroethane	ND	ug/l	10	--	10	
Bromodichloromethane	ND	ug/l	10	--	10	
trans-1,3-Dichloropropene	ND	ug/l	4.0	--	10	
cis-1,3-Dichloropropene	ND	ug/l	4.0	--	10	
1,3-Dichloropropene, Total	ND	ug/l	4.0	--	10	
1,1-Dichloropropene	ND	ug/l	20	--	10	
Bromoform	ND	ug/l	20	--	10	
1,1,2,2-Tetrachloroethane	ND	ug/l	10	--	10	
Benzene	ND	ug/l	5.0	--	10	
Toluene	ND	ug/l	10	--	10	
Ethylbenzene	ND	ug/l	10	--	10	
Chloromethane	ND	ug/l	20	--	10	
Bromomethane	ND	ug/l	20	--	10	
Vinyl chloride	ND	ug/l	10	--	10	
Chloroethane	ND	ug/l	20	--	10	
1,1-Dichloroethene	ND	ug/l	10	--	10	
trans-1,2-Dichloroethene	ND	ug/l	10	--	10	



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-09	D	Date Collected:	06/29/18 11:45
Client ID:	DUPLICATE		Date Received:	06/29/18
Sample Location:	BEVERLY, MA		Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Trichloroethene	ND	ug/l	10	--	--	10
1,2-Dichlorobenzene	ND	ug/l	10	--	--	10
1,3-Dichlorobenzene	ND	ug/l	10	--	--	10
1,4-Dichlorobenzene	ND	ug/l	10	--	--	10
Methyl tert butyl ether	ND	ug/l	20	--	--	10
p/m-Xylene	ND	ug/l	20	--	--	10
o-Xylene	ND	ug/l	10	--	--	10
Xylene (Total)	ND	ug/l	10	--	--	10
cis-1,2-Dichloroethene	ND	ug/l	10	--	--	10
1,2-Dichloroethene (total)	ND	ug/l	10	--	--	10
Dibromomethane	ND	ug/l	20	--	--	10
1,2,3-Trichloropropane	ND	ug/l	20	--	--	10
Styrene	ND	ug/l	10	--	--	10
Dichlorodifluoromethane	ND	ug/l	20	--	--	10
Acetone	ND	ug/l	50	--	--	10
Carbon disulfide	ND	ug/l	20	--	--	10
2-Butanone	ND	ug/l	50	--	--	10
4-Methyl-2-pentanone	ND	ug/l	50	--	--	10
2-Hexanone	ND	ug/l	50	--	--	10
Bromochloromethane	ND	ug/l	20	--	--	10
Tetrahydrofuran	ND	ug/l	20	--	--	10
2,2-Dichloropropane	ND	ug/l	20	--	--	10
1,2-Dibromoethane	ND	ug/l	20	--	--	10
1,3-Dichloropropane	ND	ug/l	20	--	--	10
1,1,1,2-Tetrachloroethane	ND	ug/l	10	--	--	10
Bromobenzene	ND	ug/l	20	--	--	10
n-Butylbenzene	ND	ug/l	20	--	--	10
sec-Butylbenzene	ND	ug/l	20	--	--	10
tert-Butylbenzene	ND	ug/l	20	--	--	10
o-Chlorotoluene	ND	ug/l	20	--	--	10
p-Chlorotoluene	ND	ug/l	20	--	--	10
1,2-Dibromo-3-chloropropane	ND	ug/l	20	--	--	10
Hexachlorobutadiene	ND	ug/l	6.0	--	--	10
Isopropylbenzene	ND	ug/l	20	--	--	10
p-Isopropyltoluene	ND	ug/l	20	--	--	10
Naphthalene	ND	ug/l	20	--	--	10
n-Propylbenzene	ND	ug/l	20	--	--	10



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-09	D	Date Collected:	06/29/18 11:45
Client ID:	DUPLICATE		Date Received:	06/29/18
Sample Location:	BEVERLY, MA		Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/l	20	--	10
1,2,4-Trichlorobenzene	ND		ug/l	20	--	10
1,3,5-Trimethylbenzene	ND		ug/l	20	--	10
1,2,4-Trimethylbenzene	ND		ug/l	20	--	10
Ethyl ether	ND		ug/l	20	--	10
Isopropyl Ether	ND		ug/l	20	--	10
Ethyl-Tert-Butyl-Ether	ND		ug/l	20	--	10
Tertiary-Amyl Methyl Ether	ND		ug/l	20	--	10
1,4-Dioxane	ND		ug/l	2500	--	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	109		70-130

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 07/03/18 06:27
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s):	01,03,05-06,08-09			Batch:	WG1132210-5
Methylene chloride	ND		ug/l	2.0	--
1,1-Dichloroethane	ND		ug/l	1.0	--
Chloroform	ND		ug/l	1.0	--
Carbon tetrachloride	ND		ug/l	1.0	--
1,2-Dichloropropane	ND		ug/l	1.0	--
Dibromochloromethane	ND		ug/l	1.0	--
1,1,2-Trichloroethane	ND		ug/l	1.0	--
Tetrachloroethene	ND		ug/l	1.0	--
Chlorobenzene	ND		ug/l	1.0	--
Trichlorofluoromethane	ND		ug/l	2.0	--
1,2-Dichloroethane	ND		ug/l	1.0	--
1,1,1-Trichloroethane	ND		ug/l	1.0	--
Bromodichloromethane	ND		ug/l	1.0	--
trans-1,3-Dichloropropene	ND		ug/l	0.40	--
cis-1,3-Dichloropropene	ND		ug/l	0.40	--
1,3-Dichloropropene, Total	ND		ug/l	0.40	--
1,1-Dichloropropene	ND		ug/l	2.0	--
Bromoform	ND		ug/l	2.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	1.0	--
Ethylbenzene	ND		ug/l	1.0	--
Chloromethane	ND		ug/l	2.0	--
Bromomethane	ND		ug/l	2.0	--
Vinyl chloride	ND		ug/l	1.0	--
Chloroethane	ND		ug/l	2.0	--
1,1-Dichloroethene	ND		ug/l	1.0	--
trans-1,2-Dichloroethene	ND		ug/l	1.0	--
Trichloroethene	ND		ug/l	1.0	--



Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 07/03/18 06:27
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s):	01,03,05-06,08-09			Batch:	WG1132210-5
1,2-Dichlorobenzene	ND		ug/l	1.0	--
1,3-Dichlorobenzene	ND		ug/l	1.0	--
1,4-Dichlorobenzene	ND		ug/l	1.0	--
Methyl tert butyl ether	ND		ug/l	2.0	--
p/m-Xylene	ND		ug/l	2.0	--
o-Xylene	ND		ug/l	1.0	--
Xylene (Total)	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	1.0	--
1,2-Dichloroethene (total)	ND		ug/l	1.0	--
Dibromomethane	ND		ug/l	2.0	--
1,2,3-Trichloropropane	ND		ug/l	2.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	2.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	2.0	--
2-Butanone	ND		ug/l	5.0	--
4-Methyl-2-pentanone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	2.0	--
Tetrahydrofuran	ND		ug/l	2.0	--
2,2-Dichloropropane	ND		ug/l	2.0	--
1,2-Dibromoethane	ND		ug/l	2.0	--
1,3-Dichloropropane	ND		ug/l	2.0	--
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--
Bromobenzene	ND		ug/l	2.0	--
n-Butylbenzene	ND		ug/l	2.0	--
sec-Butylbenzene	ND		ug/l	2.0	--
tert-Butylbenzene	ND		ug/l	2.0	--
o-Chlorotoluene	ND		ug/l	2.0	--



Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 07/03/18 06:27
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s):	01,03,05-06,08-09			Batch:	WG1132210-5
p-Chlorotoluene	ND		ug/l	2.0	--
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--
Hexachlorobutadiene	ND		ug/l	0.60	--
Isopropylbenzene	ND		ug/l	2.0	--
p-Isopropyltoluene	ND		ug/l	2.0	--
Naphthalene	ND		ug/l	2.0	--
n-Propylbenzene	ND		ug/l	2.0	--
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--
Ethyl ether	ND		ug/l	2.0	--
Isopropyl Ether	ND		ug/l	2.0	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--
1,4-Dioxane	ND		ug/l	250	--

Tentatively Identified Compounds

No Tentatively Identified Compounds ND ug/l



Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 07/03/18 06:27
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01,03,05-06,08-09				Batch: WG1132210-5	

Surrogate	%Recovery	Acceptance Criteria	
		Qualifier	
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	104		70-130

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 07/03/18 06:44
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s):	04	Batch:	WG1132225-5		
Methylene chloride	ND	ug/l	2.0	--	
1,1-Dichloroethane	ND	ug/l	1.0	--	
Chloroform	ND	ug/l	1.0	--	
Carbon tetrachloride	ND	ug/l	1.0	--	
1,2-Dichloropropane	ND	ug/l	1.0	--	
Dibromochloromethane	ND	ug/l	1.0	--	
1,1,2-Trichloroethane	ND	ug/l	1.0	--	
Tetrachloroethene	ND	ug/l	1.0	--	
Chlorobenzene	ND	ug/l	1.0	--	
Trichlorofluoromethane	ND	ug/l	2.0	--	
1,2-Dichloroethane	ND	ug/l	1.0	--	
1,1,1-Trichloroethane	ND	ug/l	1.0	--	
Bromodichloromethane	ND	ug/l	1.0	--	
trans-1,3-Dichloropropene	ND	ug/l	0.40	--	
cis-1,3-Dichloropropene	ND	ug/l	0.40	--	
1,3-Dichloropropene, Total	ND	ug/l	0.40	--	
1,1-Dichloropropene	ND	ug/l	2.0	--	
Bromoform	ND	ug/l	2.0	--	
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0	--	
Benzene	ND	ug/l	0.50	--	
Toluene	ND	ug/l	1.0	--	
Ethylbenzene	ND	ug/l	1.0	--	
Chloromethane	ND	ug/l	2.0	--	
Bromomethane	ND	ug/l	2.0	--	
Vinyl chloride	ND	ug/l	1.0	--	
Chloroethane	ND	ug/l	2.0	--	
1,1-Dichloroethene	ND	ug/l	1.0	--	
trans-1,2-Dichloroethene	ND	ug/l	1.0	--	
Trichloroethene	ND	ug/l	1.0	--	



Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 07/03/18 06:44
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s):	04	Batch:	WG1132225-5		
1,2-Dichlorobenzene	ND	ug/l	1.0	--	
1,3-Dichlorobenzene	ND	ug/l	1.0	--	
1,4-Dichlorobenzene	ND	ug/l	1.0	--	
Methyl tert butyl ether	ND	ug/l	2.0	--	
p/m-Xylene	ND	ug/l	2.0	--	
o-Xylene	ND	ug/l	1.0	--	
Xylene (Total)	ND	ug/l	1.0	--	
cis-1,2-Dichloroethene	ND	ug/l	1.0	--	
1,2-Dichloroethene (total)	ND	ug/l	1.0	--	
Dibromomethane	ND	ug/l	2.0	--	
1,2,3-Trichloropropane	ND	ug/l	2.0	--	
Styrene	ND	ug/l	1.0	--	
Dichlorodifluoromethane	ND	ug/l	2.0	--	
Acetone	ND	ug/l	5.0	--	
Carbon disulfide	ND	ug/l	2.0	--	
2-Butanone	ND	ug/l	5.0	--	
4-Methyl-2-pentanone	ND	ug/l	5.0	--	
2-Hexanone	ND	ug/l	5.0	--	
Bromochloromethane	ND	ug/l	2.0	--	
Tetrahydrofuran	ND	ug/l	2.0	--	
2,2-Dichloropropane	ND	ug/l	2.0	--	
1,2-Dibromoethane	ND	ug/l	2.0	--	
1,3-Dichloropropane	ND	ug/l	2.0	--	
1,1,1,2-Tetrachloroethane	ND	ug/l	1.0	--	
Bromobenzene	ND	ug/l	2.0	--	
n-Butylbenzene	ND	ug/l	2.0	--	
sec-Butylbenzene	ND	ug/l	2.0	--	
tert-Butylbenzene	ND	ug/l	2.0	--	
o-Chlorotoluene	ND	ug/l	2.0	--	



Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Method Blank Analysis Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 07/03/18 06:44
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s):	04	Batch:	WG1132225-5		
p-Chlorotoluene	ND		ug/l	2.0	--
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--
Hexachlorobutadiene	ND		ug/l	0.60	--
Isopropylbenzene	ND		ug/l	2.0	--
p-Isopropyltoluene	ND		ug/l	2.0	--
Naphthalene	ND		ug/l	2.0	--
n-Propylbenzene	ND		ug/l	2.0	--
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--
Ethyl ether	ND		ug/l	2.0	--
Isopropyl Ether	ND		ug/l	2.0	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--
1,4-Dioxane	ND		ug/l	250	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	105		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01,03,05-06,08-09 Batch: WG1132210-3 WG1132210-4								
Methylene chloride	110		100		70-130	10		20
1,1-Dichloroethane	110		110		70-130	0		20
Chloroform	110		110		70-130	0		20
Carbon tetrachloride	120		120		70-130	0		20
1,2-Dichloropropane	110		100		70-130	10		20
Dibromochloromethane	100		100		70-130	0		20
1,1,2-Trichloroethane	100		100		70-130	0		20
Tetrachloroethene	120		110		70-130	9		20
Chlorobenzene	110		110		70-130	0		20
Trichlorofluoromethane	130		120		70-130	8		20
1,2-Dichloroethane	110		100		70-130	10		20
1,1,1-Trichloroethane	120		110		70-130	9		20
Bromodichloromethane	100		100		70-130	0		20
trans-1,3-Dichloropropene	100		100		70-130	0		20
cis-1,3-Dichloropropene	100		100		70-130	0		20
1,1-Dichloropropene	110		110		70-130	0		20
Bromoform	100		98		70-130	2		20
1,1,2,2-Tetrachloroethane	100		100		70-130	0		20
Benzene	110		110		70-130	0		20
Toluene	110		100		70-130	10		20
Ethylbenzene	110		110		70-130	0		20
Chloromethane	110		100		70-130	10		20
Bromomethane	120		120		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01,03,05-06,08-09 Batch: WG1132210-3 WG1132210-4								
Vinyl chloride	110		110		70-130	0		20
Chloroethane	130		130		70-130	0		20
1,1-Dichloroethene	120		110		70-130	9		20
trans-1,2-Dichloroethene	120		120		70-130	0		20
Trichloroethene	110		110		70-130	0		20
1,2-Dichlorobenzene	110		110		70-130	0		20
1,3-Dichlorobenzene	110		110		70-130	0		20
1,4-Dichlorobenzene	110		110		70-130	0		20
Methyl tert butyl ether	99		95		70-130	4		20
p/m-Xylene	105		105		70-130	0		20
o-Xylene	100		100		70-130	0		20
cis-1,2-Dichloroethene	110		110		70-130	0		20
Dibromomethane	100		100		70-130	0		20
1,2,3-Trichloropropane	100		99		70-130	1		20
Styrene	110		105		70-130	5		20
Dichlorodifluoromethane	110		100		70-130	10		20
Acetone	65	Q	63	Q	70-130	3		20
Carbon disulfide	110		110		70-130	0		20
2-Butanone	84		86		70-130	2		20
4-Methyl-2-pentanone	84		85		70-130	1		20
2-Hexanone	81		80		70-130	1		20
Bromochloromethane	110		110		70-130	0		20
Tetrahydrofuran	86		81		70-130	6		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01,03,05-06,08-09 Batch: WG1132210-3 WG1132210-4								
2,2-Dichloropropane	120		110		70-130	9		20
1,2-Dibromoethane	100		100		70-130	0		20
1,3-Dichloropropane	100		100		70-130	0		20
1,1,1,2-Tetrachloroethane	110		110		70-130	0		20
Bromobenzene	120		110		70-130	9		20
n-Butylbenzene	100		92		70-130	8		20
sec-Butylbenzene	100		94		70-130	6		20
tert-Butylbenzene	100		97		70-130	3		20
o-Chlorotoluene	110		110		70-130	0		20
p-Chlorotoluene	110		100		70-130	10		20
1,2-Dibromo-3-chloropropane	96		90		70-130	6		20
Hexachlorobutadiene	110		100		70-130	10		20
Isopropylbenzene	110		100		70-130	10		20
p-Isopropyltoluene	110		96		70-130	14		20
Naphthalene	110		110		70-130	0		20
n-Propylbenzene	110		100		70-130	10		20
1,2,3-Trichlorobenzene	120		110		70-130	9		20
1,2,4-Trichlorobenzene	110		100		70-130	10		20
1,3,5-Trimethylbenzene	110		100		70-130	10		20
1,2,4-Trimethylbenzene	110		100		70-130	10		20
Ethyl ether	110		100		70-130	10		20
Isopropyl Ether	100		100		70-130	0		20
Ethyl-Tert-Butyl-Ether	100		100		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01,03,05-06,08-09 Batch: WG1132210-3 WG1132210-4								
Tertiary-Amyl Methyl Ether	97		94		70-130	3		20
1,4-Dioxane	84		84		70-130	0		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	95		99		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	99		101		70-130
Dibromofluoromethane	105		109		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 04 Batch: WG1132225-3 WG1132225-4								
Methylene chloride	120		110		70-130	9		20
1,1-Dichloroethane	110		110		70-130	0		20
Chloroform	100		110		70-130	10		20
Carbon tetrachloride	110		110		70-130	0		20
1,2-Dichloropropane	100		100		70-130	0		20
Dibromochloromethane	96		97		70-130	1		20
1,1,2-Trichloroethane	92		97		70-130	5		20
Tetrachloroethene	110		100		70-130	10		20
Chlorobenzene	100		100		70-130	0		20
Trichlorofluoromethane	140	Q	130		70-130	7		20
1,2-Dichloroethane	100		100		70-130	0		20
1,1,1-Trichloroethane	110		110		70-130	0		20
Bromodichloromethane	100		100		70-130	0		20
trans-1,3-Dichloropropene	96		96		70-130	0		20
cis-1,3-Dichloropropene	96		97		70-130	1		20
1,1-Dichloropropene	100		110		70-130	10		20
Bromoform	96		96		70-130	0		20
1,1,2,2-Tetrachloroethane	97		97		70-130	0		20
Benzene	100		100		70-130	0		20
Toluene	100		100		70-130	0		20
Ethylbenzene	100		100		70-130	0		20
Chloromethane	110		100		70-130	10		20
Bromomethane	110		100		70-130	10		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 04 Batch: WG1132225-3 WG1132225-4								
Vinyl chloride	110		110		70-130	0		20
Chloroethane	130		130		70-130	0		20
1,1-Dichloroethene	110		110		70-130	0		20
trans-1,2-Dichloroethene	120		110		70-130	9		20
Trichloroethene	100		110		70-130	10		20
1,2-Dichlorobenzene	100		100		70-130	0		20
1,3-Dichlorobenzene	100		100		70-130	0		20
1,4-Dichlorobenzene	100		100		70-130	0		20
Methyl tert butyl ether	94		95		70-130	1		20
p/m-Xylene	100		100		70-130	0		20
o-Xylene	100		95		70-130	5		20
cis-1,2-Dichloroethene	100		100		70-130	0		20
Dibromomethane	99		97		70-130	2		20
1,2,3-Trichloropropane	99		99		70-130	0		20
Styrene	100		100		70-130	0		20
Dichlorodifluoromethane	110		110		70-130	0		20
Acetone	94		96		70-130	2		20
Carbon disulfide	100		100		70-130	0		20
2-Butanone	87		83		70-130	5		20
4-Methyl-2-pentanone	88		90		70-130	2		20
2-Hexanone	77		80		70-130	4		20
Bromochloromethane	110		110		70-130	0		20
Tetrahydrofuran	90		90		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 04 Batch: WG1132225-3 WG1132225-4								
2,2-Dichloropropane	120		120		70-130	0		20
1,2-Dibromoethane	96		96		70-130	0		20
1,3-Dichloropropane	96		97		70-130	1		20
1,1,1,2-Tetrachloroethane	100		100		70-130	0		20
Bromobenzene	100		100		70-130	0		20
n-Butylbenzene	89		90		70-130	1		20
sec-Butylbenzene	94		96		70-130	2		20
tert-Butylbenzene	96		96		70-130	0		20
o-Chlorotoluene	100		100		70-130	0		20
p-Chlorotoluene	97		99		70-130	2		20
1,2-Dibromo-3-chloropropane	92		82		70-130	11		20
Hexachlorobutadiene	100		100		70-130	0		20
Isopropylbenzene	100		100		70-130	0		20
p-Isopropyltoluene	94		95		70-130	1		20
Naphthalene	92		88		70-130	4		20
n-Propylbenzene	100		100		70-130	0		20
1,2,3-Trichlorobenzene	93		91		70-130	2		20
1,2,4-Trichlorobenzene	92		88		70-130	4		20
1,3,5-Trimethylbenzene	98		99		70-130	1		20
1,2,4-Trimethylbenzene	94		94		70-130	0		20
Ethyl ether	100		100		70-130	0		20
Isopropyl Ether	95		98		70-130	3		20
Ethyl-Tert-Butyl-Ether	96		98		70-130	2		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 04 Batch: WG1132225-3 WG1132225-4								
Tertiary-Amyl Methyl Ether	95		94		70-130	1		20
1,4-Dioxane	98		94		70-130	4		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	99		100		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	99		101		70-130
Dibromofluoromethane	107		108		70-130

Matrix Spike Analysis
Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	Qual	RPD
MCP Volatile Organics - Westborough Lab Associated sample(s): 01,03,05-06,08-09 QC Batch ID: WG1132210-6 WG1132210-7 QC Sample: L1824997-05 Client ID: FSL-11												
Methylene chloride	ND	10	9.8	98		11	110		70-130	12		20
1,1-Dichloroethane	ND	10	11	110		12	120		70-130	9		20
Chloroform	ND	10	11	110		12	120		70-130	9		20
Carbon tetrachloride	ND	10	12	120		13	130		70-130	8		20
1,2-Dichloropropane	ND	10	10	100		11	110		70-130	10		20
Dibromochloromethane	ND	10	10	100		11	110		70-130	10		20
1,1,2-Trichloroethane	ND	10	10	100		11	110		70-130	10		20
Tetrachloroethene	ND	10	11	110		12	120		70-130	9		20
Chlorobenzene	ND	10	11	110		12	120		70-130	9		20
Trichlorofluoromethane	ND	10	13	130		14	140	Q	70-130	7		20
1,2-Dichloroethane	ND	10	11	110		12	120		70-130	9		20
1,1,1-Trichloroethane	ND	10	12	120		13	130		70-130	8		20
Bromodichloromethane	ND	10	10	100		12	120		70-130	18		20
trans-1,3-Dichloropropene	ND	10	9.8	98		10	100		70-130	2		20
cis-1,3-Dichloropropene	ND	10	9.9	99		11	110		70-130	11		20
1,1-Dichloropropene	ND	10	11	110		12	120		70-130	9		20
Bromoform	ND	10	9.4	94		10	100		70-130	6		20
1,1,2,2-Tetrachloroethane	ND	10	11	110		12	120		70-130	9		20
Benzene	ND	10	11	110		12	120		70-130	9		20
Toluene	ND	10	11	110		11	110		70-130	0		20
Ethylbenzene	1.8	10	14	122		14	122		70-130	0		20
Chloromethane	ND	10	11	110		12	120		70-130	9		20
Bromomethane	ND	10	10	100		12	120		70-130	18		20

Matrix Spike Analysis
Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	RPD Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01,03,05-06,08-09 QC Batch ID: WG1132210-6 WG1132210-7 QC Sample: L1824997-05 Client ID: FSL-11												
Vinyl chloride	ND	10	12	120		13	130		70-130	8		20
Chloroethane	ND	10	13	130		14	140	Q	70-130	7		20
1,1-Dichloroethene	ND	10	12	120		12	120		70-130	0		20
trans-1,2-Dichloroethene	ND	10	12	120		12	120		70-130	0		20
Trichloroethene	ND	10	11	110		12	120		70-130	9		20
1,2-Dichlorobenzene	ND	10	10	100		11	110		70-130	10		20
1,3-Dichlorobenzene	ND	10	10	100		11	110		70-130	10		20
1,4-Dichlorobenzene	ND	10	10	100		11	110		70-130	10		20
Methyl tert butyl ether	ND	10	10	100		11	110		70-130	10		20
p/m-Xylene	2.3	20	25	114		26	119		70-130	4		20
o-Xylene	ND	20	21	105		22	110		70-130	5		20
cis-1,2-Dichloroethene	ND	10	11	110		12	120		70-130	9		20
Dibromomethane	ND	10	11	110		11	110		70-130	0		20
1,2,3-Trichloropropane	ND	10	10	100		12	120		70-130	18		20
Styrene	ND	20	21	105		22	110		70-130	5		20
Dichlorodifluoromethane	ND	10	11	110		12	120		70-130	9		20
Acetone	6.2	10	16	98		18	118		70-130	12		20
Carbon disulfide	ND	10	11	110		12	120		70-130	9		20
2-Butanone	ND	10	13	130		13	130		70-130	0		20
4-Methyl-2-pentanone	ND	10	10	100		11	110		70-130	10		20
2-Hexanone	ND	10	10	100		11	110		70-130	10		20
Bromochloromethane	ND	10	11	110		12	120		70-130	9		20
Tetrahydrofuran	ND	10	10	100		11	110		70-130	10		20

Matrix Spike Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01,03,05-06,08-09 QC Batch ID: WG1132210-6 WG1132210-7 QC Sample: L1824997-05 Client ID: FSL-11												
2,2-Dichloropropane	ND	10	10	100		11	110		70-130	10		20
1,2-Dibromoethane	ND	10	10	100		11	110		70-130	10		20
1,3-Dichloropropane	ND	10	11	110		11	110		70-130	0		20
1,1,1,2-Tetrachloroethane	ND	10	10	100		11	110		70-130	10		20
Bromobenzene	ND	10	10	100		11	110		70-130	10		20
n-Butylbenzene	ND	10	10	100		10	100		70-130	0		20
sec-Butylbenzene	ND	10	9.6	96		10	100		70-130	4		20
tert-Butylbenzene	ND	10	9.8	98		10	100		70-130	2		20
o-Chlorotoluene	ND	10	10	100		11	110		70-130	10		20
p-Chlorotoluene	ND	10	9.9	99		10	100		70-130	1		20
1,2-Dibromo-3-chloropropane	ND	10	10	100		11	110		70-130	10		20
Hexachlorobutadiene	ND	10	9.5	95		11	110		70-130	15		20
Isopropylbenzene	ND	10	10	100		11	110		70-130	10		20
p-Isopropyltoluene	ND	10	9.6	96		10	100		70-130	4		20
Naphthalene	ND	10	13	130		14	140	Q	70-130	7		20
n-Propylbenzene	ND	10	9.8	98		11	110		70-130	12		20
1,2,3-Trichlorobenzene	ND	10	11	110		12	120		70-130	9		20
1,2,4-Trichlorobenzene	ND	10	10	100		11	110		70-130	10		20
1,3,5-Trimethylbenzene	ND	10	10	100		11	110		70-130	10		20
1,2,4-Trimethylbenzene	ND	10	10	100		11	110		70-130	10		20
Ethyl ether	ND	10	10	100		12	120		70-130	18		20
Isopropyl Ether	ND	10	10	100		11	110		70-130	10		20
Ethyl-Tert-Butyl-Ether	ND	10	10	100		11	110		70-130	10		20

Matrix Spike Analysis
Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	RPD Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01,03,05-06,08-09 QC Batch ID: WG1132210-6 WG1132210-7 QC Sample: L1824997-05 Client ID: FSL-11												
Tertiary-Amyl Methyl Ether	ND	10	9.9	99		11	110		70-130	11		20
1,4-Dioxane	ND	500	550	110		600	120		70-130	9		20

Surrogate	MS	MS		MSD	MSD		Acceptance Criteria
	% Recovery	Qualifier	% Recovery	Qualifier	% Recovery	Qualifier	
1,2-Dichloroethane-d4	106		106		106		70-130
4-Bromofluorobenzene	99		98		98		70-130
Dibromofluoromethane	109		108		108		70-130
Toluene-d8	102		99		99		70-130

PETROLEUM HYDROCARBONS



Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-01
Client ID: FSL-4
Sample Location: BEVERLY, MA

Date Collected: 06/29/18 09:20
Date Received: 06/29/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 131,VPH-18-2.1
Analytical Date: 07/02/18 18:07
Analyst: MZ

Trap: EST, Carbopack B/Carboxen 1000&1001

Analytical Column: Restek, RTX-502.2, 105m, 0.53ID, 3um

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		ug/l	50.0	--	1
C9-C12 Aliphatics	ND		ug/l	50.0	--	1
C9-C10 Aromatics	ND		ug/l	50.0	--	1
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
Benzene	ND		ug/l	2.00	--	1
Toluene	ND		ug/l	2.00	--	1
Ethylbenzene	ND		ug/l	2.00	--	1
p/m-Xylene	ND		ug/l	2.00	--	1
o-Xylene	ND		ug/l	2.00	--	1
Methyl tert butyl ether	ND		ug/l	3.00	--	1
Naphthalene	ND		ug/l	4.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	78		70-130
2,5-Dibromotoluene-FID	87		70-130

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-01	Date Collected:	06/29/18 09:20
Client ID:	FSL-4	Date Received:	06/29/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1	Extraction Date:	07/05/18 02:20
Analytical Date:	07/08/18 16:36	Cleanup Method1:	EPH-04-1
Analyst:	DG	M.S. Analyst:	DV
		Cleanup Date1:	07/08/18

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1
Naphthalene	0.642	B	ug/l	0.400	--	1
2-Methylnaphthalene	ND		ug/l	0.400	--	1
Acenaphthylene	ND		ug/l	0.400	--	1
Acenaphthene	ND		ug/l	0.400	--	1
Fluorene	ND		ug/l	0.400	--	1
Phenanthrene	ND		ug/l	0.400	--	1
Anthracene	ND		ug/l	0.400	--	1
Fluoranthene	ND		ug/l	0.400	--	1
Pyrene	ND		ug/l	0.400	--	1
Benzo(a)anthracene	ND		ug/l	0.400	--	1
Chrysene	ND		ug/l	0.400	--	1
Benzo(b)fluoranthene	ND		ug/l	0.400	--	1
Benzo(k)fluoranthene	ND		ug/l	0.400	--	1
Benzo(a)pyrene	ND		ug/l	0.200	--	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.400	--	1
Benzo(ghi)perylene	ND		ug/l	0.400	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-01
 Client ID: FSL-4
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 09:20
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	49		40-140
o-Terphenyl	57		40-140
2-Fluorobiphenyl	70		40-140
2-Bromonaphthalene	70		40-140
O-Terphenyl-MS	70		40-140

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-02
Client ID: FSL-5
Sample Location: BEVERLY, MA

Date Collected: 06/29/18 10:20
Date Received: 06/29/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 131,VPH-18-2.1
Analytical Date: 07/02/18 18:47
Analyst: MZ

Trap: EST, Carbopack B/Carboxen 1000&1001

Analytical Column: Restek, RTX-502.2, 105m, 0.53ID, 3um

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		ug/l	50.0	--	1
C9-C12 Aliphatics	ND		ug/l	50.0	--	1
C9-C10 Aromatics	ND		ug/l	50.0	--	1
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
Benzene	ND		ug/l	2.00	--	1
Toluene	ND		ug/l	2.00	--	1
Ethylbenzene	ND		ug/l	2.00	--	1
p/m-Xylene	ND		ug/l	2.00	--	1
o-Xylene	ND		ug/l	2.00	--	1
Methyl tert butyl ether	ND		ug/l	3.00	--	1
Naphthalene	ND		ug/l	4.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	82		70-130
2,5-Dibromotoluene-FID	91		70-130



Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-02	Date Collected:	06/29/18 10:20
Client ID:	FSL-5	Date Received:	06/29/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1	Extraction Date:	07/05/18 02:20
Analytical Date:	07/08/18 17:14	Cleanup Method1:	EPH-04-1
Analyst:	DG	M.S. Analyst:	DV
		Cleanup Date1:	07/08/18

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1
Naphthalene	0.916	B	ug/l	0.400	--	1
2-Methylnaphthalene	0.440	B	ug/l	0.400	--	1
Acenaphthylene	ND		ug/l	0.400	--	1
Acenaphthene	ND		ug/l	0.400	--	1
Fluorene	ND		ug/l	0.400	--	1
Phenanthrene	0.784		ug/l	0.400	--	1
Anthracene	ND		ug/l	0.400	--	1
Fluoranthene	1.31		ug/l	0.400	--	1
Pyrene	1.15		ug/l	0.400	--	1
Benzo(a)anthracene	0.590		ug/l	0.400	--	1
Chrysene	0.628		ug/l	0.400	--	1
Benzo(b)fluoranthene	0.644		ug/l	0.400	--	1
Benzo(k)fluoranthene	ND		ug/l	0.400	--	1
Benzo(a)pyrene	0.554		ug/l	0.200	--	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.400	--	1
Benzo(ghi)perylene	ND		ug/l	0.400	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-02
 Client ID: FSL-5
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 10:20
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	13	Q	40-140
o-Terphenyl	13	Q	40-140
2-Fluorobiphenyl	59		40-140
2-Bromonaphthalene	60		40-140
O-Terphenyl-MS	20	Q	40-140

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-02	RE	Date Collected:	06/29/18 10:20
Client ID:	FSL-5		Date Received:	06/29/18
Sample Location:	BEVERLY, MA		Field Prep:	Not Specified

Sample Depth:

Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1	Extraction Date:	07/12/18 10:59
Analytical Date:	07/13/18 18:17	Cleanup Method1:	EPH-04-1
Analyst:	DG	M.S. Analyst:	DV
		Cleanup Date1:	07/12/18

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1
Naphthalene	1.02		ug/l	0.400	--	1
2-Methylnaphthalene	ND		ug/l	0.400	--	1
Acenaphthylene	ND		ug/l	0.400	--	1
Acenaphthene	ND		ug/l	0.400	--	1
Fluorene	ND		ug/l	0.400	--	1
Phenanthrene	0.944		ug/l	0.400	--	1
Anthracene	ND		ug/l	0.400	--	1
Fluoranthene	1.44		ug/l	0.400	--	1
Pyrene	1.25		ug/l	0.400	--	1
Benzo(a)anthracene	0.698		ug/l	0.400	--	1
Chrysene	0.716		ug/l	0.400	--	1
Benzo(b)fluoranthene	0.714		ug/l	0.400	--	1
Benzo(k)fluoranthene	ND		ug/l	0.400	--	1
Benzo(a)pyrene	0.604		ug/l	0.200	--	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.400	--	1
Benzo(ghi)perylene	ND		ug/l	0.400	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-02 RE
 Client ID: FSL-5
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 10:20
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	10	Q	40-140
o-Terphenyl	24	Q	40-140
2-Fluorobiphenyl	90		40-140
2-Bromonaphthalene	85		40-140
O-Terphenyl-MS	23	Q	40-140

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-03
Client ID: FSL-6
Sample Location: BEVERLY, MA

Date Collected: 06/29/18 11:20
Date Received: 06/29/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 131,VPH-18-2.1
Analytical Date: 07/02/18 19:28
Analyst: MZ

Trap: EST, Carbopack B/Carboxen 1000&1001

Analytical Column: Restek, RTX-502.2, 105m, 0.53ID, 3um

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		ug/l	50.0	--	1
C9-C12 Aliphatics	ND		ug/l	50.0	--	1
C9-C10 Aromatics	ND		ug/l	50.0	--	1
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
Benzene	ND		ug/l	2.00	--	1
Toluene	ND		ug/l	2.00	--	1
Ethylbenzene	ND		ug/l	2.00	--	1
p/m-Xylene	ND		ug/l	2.00	--	1
o-Xylene	ND		ug/l	2.00	--	1
Methyl tert butyl ether	ND		ug/l	3.00	--	1
Naphthalene	ND		ug/l	4.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	80		70-130
2,5-Dibromotoluene-FID	88		70-130



Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-03
Client ID: FSL-6
Sample Location: BEVERLY, MA

Date Collected: 06/29/18 11:20
Date Received: 06/29/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 98,EPH-04-1.1
Analytical Date: 07/08/18 17:52 M.S. Analytical Date: 07/10/18 16:23
Analyst: DG M.S. Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 07/05/18 02:20
Cleanup Method1: EPH-04-1
Cleanup Date1: 07/08/18

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1
Naphthalene	0.578	B	ug/l	0.400	--	1
2-Methylnaphthalene	ND		ug/l	0.400	--	1
Acenaphthylene	ND		ug/l	0.400	--	1
Acenaphthene	ND		ug/l	0.400	--	1
Fluorene	ND		ug/l	0.400	--	1
Phenanthrene	ND		ug/l	0.400	--	1
Anthracene	ND		ug/l	0.400	--	1
Fluoranthene	ND		ug/l	0.400	--	1
Pyrene	ND		ug/l	0.400	--	1
Benzo(a)anthracene	ND		ug/l	0.400	--	1
Chrysene	ND		ug/l	0.400	--	1
Benzo(b)fluoranthene	ND		ug/l	0.400	--	1
Benzo(k)fluoranthene	ND		ug/l	0.400	--	1
Benzo(a)pyrene	ND		ug/l	0.200	--	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.400	--	1
Benzo(ghi)perylene	ND		ug/l	0.400	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-03
 Client ID: FSL-6
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 11:20
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	54		40-140
o-Terphenyl	68		40-140
2-Fluorobiphenyl	81		40-140
2-Bromonaphthalene	82		40-140
O-Terphenyl-MS	69		40-140

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-04	Date Collected:	06/29/18 12:45
Client ID:	FSL-7	Date Received:	06/29/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1	Extraction Date:	07/05/18 02:20
Analytical Date:	07/08/18 18:30	Cleanup Method1:	EPH-04-1
Analyst:	DG	Cleanup Date1:	07/08/18
	M.S. Analyst:	DV	

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1
Naphthalene	1.90	B	ug/l	0.400	--	1
2-Methylnaphthalene	0.666	B	ug/l	0.400	--	1
Acenaphthylene	ND		ug/l	0.400	--	1
Acenaphthene	ND		ug/l	0.400	--	1
Fluorene	ND		ug/l	0.400	--	1
Phenanthrene	ND		ug/l	0.400	--	1
Anthracene	ND		ug/l	0.400	--	1
Fluoranthene	ND		ug/l	0.400	--	1
Pyrene	ND		ug/l	0.400	--	1
Benzo(a)anthracene	ND		ug/l	0.400	--	1
Chrysene	ND		ug/l	0.400	--	1
Benzo(b)fluoranthene	ND		ug/l	0.400	--	1
Benzo(k)fluoranthene	ND		ug/l	0.400	--	1
Benzo(a)pyrene	ND		ug/l	0.200	--	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.400	--	1
Benzo(ghi)perylene	ND		ug/l	0.400	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-04
 Client ID: FSL-7
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 12:45
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	79		40-140
o-Terphenyl	58		40-140
2-Fluorobiphenyl	63		40-140
2-Bromonaphthalene	64		40-140
O-Terphenyl-MS	90		40-140

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-04 D
Client ID: FSL-7
Sample Location: BEVERLY, MA

Date Collected: 06/29/18 12:45
Date Received: 06/29/18
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 131,VPH-18-2.1
Analytical Date: 07/08/18 00:30
Analyst: KD

Trap: EST, Carbopack B/Carboxen 1000&1001 Analytical Column: Restek, RTX-502.2, 105m, 0.53ID, 3um

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		ug/l	5000	--	100
C9-C12 Aliphatics	57700		ug/l	5000	--	100
C9-C10 Aromatics	ND		ug/l	5000	--	100
C5-C8 Aliphatics, Adjusted	ND		ug/l	5000	--	100
C9-C12 Aliphatics, Adjusted	14500		ug/l	5000	--	100
Benzene	ND		ug/l	200	--	100
Toluene	ND		ug/l	200	--	100
Ethylbenzene	18800		ug/l	200	--	100
p/m-Xylene	24500		ug/l	200	--	100
o-Xylene	ND		ug/l	200	--	100
Methyl tert butyl ether	ND		ug/l	300	--	100
Naphthalene	ND		ug/l	400	--	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	81		70-130
2,5-Dibromotoluene-FID	93		70-130



Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-05
Client ID: FSL-11
Sample Location: BEVERLY, MA

Date Collected: 06/29/18 13:45
Date Received: 06/29/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 131,VPH-18-2.1
Analytical Date: 07/02/18 20:08
Analyst: MZ

Trap: EST, Carbopack B/Carboxen 1000&1001

Analytical Column: Restek, RTX-502.2, 105m, 0.53ID, 3um

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		ug/l	50.0	--	1
C9-C12 Aliphatics	ND		ug/l	50.0	--	1
C9-C10 Aromatics	ND		ug/l	50.0	--	1
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
Benzene	ND		ug/l	2.00	--	1
Toluene	ND		ug/l	2.00	--	1
Ethylbenzene	ND		ug/l	2.00	--	1
p/m-Xylene	ND		ug/l	2.00	--	1
o-Xylene	ND		ug/l	2.00	--	1
Methyl tert butyl ether	ND		ug/l	3.00	--	1
Naphthalene	ND		ug/l	4.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	83		70-130
2,5-Dibromotoluene-FID	92		70-130

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-05	Date Collected:	06/29/18 13:45
Client ID:	FSL-11	Date Received:	06/29/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1	Extraction Date:	07/05/18 02:20
Analytical Date:	07/08/18 15:58	Cleanup Method1:	EPH-04-1
Analyst:	DG	M.S. Analyst:	DV
		Cleanup Date1:	07/08/18

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1
Naphthalene	0.598	B	ug/l	0.400	--	1
2-Methylnaphthalene	ND		ug/l	0.400	--	1
Acenaphthylene	ND		ug/l	0.400	--	1
Acenaphthene	ND		ug/l	0.400	--	1
Fluorene	ND		ug/l	0.400	--	1
Phenanthrene	ND		ug/l	0.400	--	1
Anthracene	ND		ug/l	0.400	--	1
Fluoranthene	ND		ug/l	0.400	--	1
Pyrene	ND		ug/l	0.400	--	1
Benzo(a)anthracene	ND		ug/l	0.400	--	1
Chrysene	ND		ug/l	0.400	--	1
Benzo(b)fluoranthene	ND		ug/l	0.400	--	1
Benzo(k)fluoranthene	ND		ug/l	0.400	--	1
Benzo(a)pyrene	ND		ug/l	0.200	--	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.400	--	1
Benzo(ghi)perylene	ND		ug/l	0.400	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-05
 Client ID: FSL-11
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 13:45
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	44		40-140
o-Terphenyl	45		40-140
2-Fluorobiphenyl	66		40-140
2-Bromonaphthalene	66		40-140
O-Terphenyl-MS	58		40-140

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-06
Client ID: DUPLICATE
Sample Location: BEVERLY, MA

Date Collected: 06/29/18 09:20
Date Received: 06/29/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 131,VPH-18-2.1
Analytical Date: 07/02/18 22:08
Analyst: MZ

Trap: EST, Carbopack B/Carboxen 1000&1001

Analytical Column: Restek, RTX-502.2, 105m, 0.53ID, 3um

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		ug/l	50.0	--	1
C9-C12 Aliphatics	ND		ug/l	50.0	--	1
C9-C10 Aromatics	ND		ug/l	50.0	--	1
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
Benzene	ND		ug/l	2.00	--	1
Toluene	ND		ug/l	2.00	--	1
Ethylbenzene	ND		ug/l	2.00	--	1
p/m-Xylene	ND		ug/l	2.00	--	1
o-Xylene	ND		ug/l	2.00	--	1
Methyl tert butyl ether	ND		ug/l	3.00	--	1
Naphthalene	ND		ug/l	4.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	77		70-130
2,5-Dibromotoluene-FID	85		70-130

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-06	Date Collected:	06/29/18 09:20
Client ID:	DUPLICATE	Date Received:	06/29/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1	Extraction Date:	07/05/18 02:20
Analytical Date:	07/08/18 19:08	Cleanup Method1:	EPH-04-1
Analyst:	DG	Cleanup Date1:	07/08/18
	M.S. Analyst:	DV	

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1
Naphthalene	0.642	B	ug/l	0.400	--	1
2-Methylnaphthalene	0.412	B	ug/l	0.400	--	1
Acenaphthylene	ND		ug/l	0.400	--	1
Acenaphthene	ND		ug/l	0.400	--	1
Fluorene	ND		ug/l	0.400	--	1
Phenanthrene	ND		ug/l	0.400	--	1
Anthracene	ND		ug/l	0.400	--	1
Fluoranthene	ND		ug/l	0.400	--	1
Pyrene	ND		ug/l	0.400	--	1
Benzo(a)anthracene	ND		ug/l	0.400	--	1
Chrysene	ND		ug/l	0.400	--	1
Benzo(b)fluoranthene	ND		ug/l	0.400	--	1
Benzo(k)fluoranthene	ND		ug/l	0.400	--	1
Benzo(a)pyrene	ND		ug/l	0.200	--	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.400	--	1
Benzo(ghi)perylene	ND		ug/l	0.400	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-06
 Client ID: DUPLICATE
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 09:20
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	53		40-140
o-Terphenyl	60		40-140
2-Fluorobiphenyl	73		40-140
2-Bromonaphthalene	74		40-140
O-Terphenyl-MS	73		40-140

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-08
Client ID: FSL-12
Sample Location: BEVERLY, MA

Date Collected: 06/29/18 11:45
Date Received: 06/29/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 131,VPH-18-2.1
Analytical Date: 07/02/18 22:48
Analyst: MZ

Trap: EST, Carbopack B/Carboxen 1000&1001

Analytical Column: Restek, RTX-502.2, 105m, 0.53ID, 3um

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		ug/l	50.0	--	1
C9-C12 Aliphatics	ND		ug/l	50.0	--	1
C9-C10 Aromatics	ND		ug/l	50.0	--	1
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
Benzene	ND		ug/l	2.00	--	1
Toluene	ND		ug/l	2.00	--	1
Ethylbenzene	ND		ug/l	2.00	--	1
p/m-Xylene	ND		ug/l	2.00	--	1
o-Xylene	ND		ug/l	2.00	--	1
Methyl tert butyl ether	ND		ug/l	3.00	--	1
Naphthalene	ND		ug/l	4.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	77		70-130
2,5-Dibromotoluene-FID	85		70-130

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-08
Client ID: FSL-12
Sample Location: BEVERLY, MA

Date Collected: 06/29/18 11:45
Date Received: 06/29/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 98,EPH-04-1.1
Analytical Date: 07/08/18 19:45 M.S. Analytical Date: 07/10/18 17:56
Analyst: DG M.S. Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 07/05/18 02:20
Cleanup Method1: EPH-04-1
Cleanup Date1: 07/08/18

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1
Naphthalene	0.556	B	ug/l	0.400	--	1
2-Methylnaphthalene	ND		ug/l	0.400	--	1
Acenaphthylene	ND		ug/l	0.400	--	1
Acenaphthene	ND		ug/l	0.400	--	1
Fluorene	ND		ug/l	0.400	--	1
Phenanthrene	ND		ug/l	0.400	--	1
Anthracene	ND		ug/l	0.400	--	1
Fluoranthene	ND		ug/l	0.400	--	1
Pyrene	ND		ug/l	0.400	--	1
Benzo(a)anthracene	ND		ug/l	0.400	--	1
Chrysene	ND		ug/l	0.400	--	1
Benzo(b)fluoranthene	ND		ug/l	0.400	--	1
Benzo(k)fluoranthene	ND		ug/l	0.400	--	1
Benzo(a)pyrene	ND		ug/l	0.200	--	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.400	--	1
Benzo(ghi)perylene	ND		ug/l	0.400	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-08
 Client ID: FSL-12
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 11:45
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	44		40-140
o-Terphenyl	45		40-140
2-Fluorobiphenyl	63		40-140
2-Bromonaphthalene	63		40-140
O-Terphenyl-MS	58		40-140

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-09
Client ID: DUPLICATE
Sample Location: BEVERLY, MA

Date Collected: 06/29/18 11:45
Date Received: 06/29/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 131,VPH-18-2.1
Analytical Date: 07/02/18 23:28
Analyst: MZ

Trap: EST, Carbopack B/Carboxen 1000&1001

Analytical Column: Restek, RTX-502.2, 105m, 0.53ID, 3um

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		ug/l	50.0	--	1
C9-C12 Aliphatics	ND		ug/l	50.0	--	1
C9-C10 Aromatics	ND		ug/l	50.0	--	1
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
Benzene	ND		ug/l	2.00	--	1
Toluene	ND		ug/l	2.00	--	1
Ethylbenzene	ND		ug/l	2.00	--	1
p/m-Xylene	ND		ug/l	2.00	--	1
o-Xylene	ND		ug/l	2.00	--	1
Methyl tert butyl ether	ND		ug/l	3.00	--	1
Naphthalene	ND		ug/l	4.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	77		70-130
2,5-Dibromotoluene-FID	84		70-130



Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-09	Date Collected:	06/29/18 11:45
Client ID:	DUPLICATE	Date Received:	06/29/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1	Extraction Date:	07/05/18 02:20
Analytical Date:	07/08/18 20:23	Cleanup Method1:	EPH-04-1
Analyst:	DG	Cleanup Date1:	07/08/18
	M.S. Analyst:	DV	

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1
Naphthalene	0.910	B	ug/l	0.400	--	1
2-Methylnaphthalene	0.602	B	ug/l	0.400	--	1
Acenaphthylene	ND		ug/l	0.400	--	1
Acenaphthene	ND		ug/l	0.400	--	1
Fluorene	ND		ug/l	0.400	--	1
Phenanthrene	ND		ug/l	0.400	--	1
Anthracene	ND		ug/l	0.400	--	1
Fluoranthene	ND		ug/l	0.400	--	1
Pyrene	ND		ug/l	0.400	--	1
Benzo(a)anthracene	ND		ug/l	0.400	--	1
Chrysene	ND		ug/l	0.400	--	1
Benzo(b)fluoranthene	ND		ug/l	0.400	--	1
Benzo(k)fluoranthene	ND		ug/l	0.400	--	1
Benzo(a)pyrene	ND		ug/l	0.200	--	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.400	--	1
Benzo(ghi)perylene	ND		ug/l	0.400	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-09
 Client ID: DUPLICATE
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 11:45
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	51		40-140
o-Terphenyl	32	Q	40-140
2-Fluorobiphenyl	38	Q	40-140
2-Bromonaphthalene	39	Q	40-140
O-Terphenyl-MS	103		40-140

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-09	RE	Date Collected:	06/29/18 11:45
Client ID:	DUPLICATE		Date Received:	06/29/18
Sample Location:	BEVERLY, MA		Field Prep:	Not Specified
Sample Depth:				
Matrix:	Water		Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1		Extraction Date:	07/12/18 10:59
Analytical Date:	07/13/18 20:55	M.S. Analytical Date: 07/15/18 18:11	Cleanup Method1:	EPH-04-1
Analyst:	DG	M.S. Analyst: DV	Cleanup Date1:	07/12/18

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1
Naphthalene	0.668		ug/l	0.400	--	1
2-Methylnaphthalene	0.434		ug/l	0.400	--	1
Acenaphthylene	ND		ug/l	0.400	--	1
Acenaphthene	ND		ug/l	0.400	--	1
Fluorene	ND		ug/l	0.400	--	1
Phenanthrene	ND		ug/l	0.400	--	1
Anthracene	ND		ug/l	0.400	--	1
Fluoranthene	ND		ug/l	0.400	--	1
Pyrene	ND		ug/l	0.400	--	1
Benzo(a)anthracene	ND		ug/l	0.400	--	1
Chrysene	ND		ug/l	0.400	--	1
Benzo(b)fluoranthene	ND		ug/l	0.400	--	1
Benzo(k)fluoranthene	ND		ug/l	0.400	--	1
Benzo(a)pyrene	ND		ug/l	0.200	--	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.400	--	1
Benzo(ghi)perylene	ND		ug/l	0.400	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-09 RE
 Client ID: DUPLICATE
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 11:45
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	37	Q	40-140
o-Terphenyl	88		40-140
2-Fluorobiphenyl	92		40-140
2-Bromonaphthalene	86		40-140
O-Terphenyl-MS	76		40-140

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-10
Client ID: FSL-13
Sample Location: BEVERLY, MA

Date Collected: 06/29/18 13:35
Date Received: 06/29/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 131,VPH-18-2.1
Analytical Date: 07/03/18 00:08
Analyst: MZ

Trap: EST, Carbopack B/Carboxen 1000&1001

Analytical Column: Restek, RTX-502.2, 105m, 0.53ID, 3um

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		ug/l	50.0	--	1
C9-C12 Aliphatics	ND		ug/l	50.0	--	1
C9-C10 Aromatics	ND		ug/l	50.0	--	1
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
Benzene	ND		ug/l	2.00	--	1
Toluene	ND		ug/l	2.00	--	1
Ethylbenzene	ND		ug/l	2.00	--	1
p/m-Xylene	ND		ug/l	2.00	--	1
o-Xylene	ND		ug/l	2.00	--	1
Methyl tert butyl ether	ND		ug/l	3.00	--	1
Naphthalene	ND		ug/l	4.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	81		70-130
2,5-Dibromotoluene-FID	88		70-130



Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-10	Date Collected:	06/29/18 13:35
Client ID:	FSL-13	Date Received:	06/29/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1	Extraction Date:	07/05/18 02:20
Analytical Date:	07/08/18 21:39	Cleanup Method1:	EPH-04-1
Analyst:	DG	Cleanup Date1:	07/08/18
	M.S. Analyst:	CB	

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1
Naphthalene	1.28	B	ug/l	0.400	--	1
2-Methylnaphthalene	0.592	B	ug/l	0.400	--	1
Acenaphthylene	ND		ug/l	0.400	--	1
Acenaphthene	ND		ug/l	0.400	--	1
Fluorene	ND		ug/l	0.400	--	1
Phenanthrene	ND		ug/l	0.400	--	1
Anthracene	ND		ug/l	0.400	--	1
Fluoranthene	ND		ug/l	0.400	--	1
Pyrene	ND		ug/l	0.400	--	1
Benzo(a)anthracene	ND		ug/l	0.400	--	1
Chrysene	ND		ug/l	0.400	--	1
Benzo(b)fluoranthene	ND		ug/l	0.400	--	1
Benzo(k)fluoranthene	ND		ug/l	0.400	--	1
Benzo(a)pyrene	ND		ug/l	0.200	--	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.400	--	1
Benzo(ghi)perylene	ND		ug/l	0.400	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-10
 Client ID: FSL-13
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 13:35
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	66		40-140
o-Terphenyl	54		40-140
2-Fluorobiphenyl	61		40-140
2-Bromonaphthalene	62		40-140
O-Terphenyl-MS	82		40-140

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-11
Client ID: FSL-14
Sample Location: BEVERLY, MA

Date Collected: 06/29/18 10:25
Date Received: 06/29/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 131,VPH-18-2.1
Analytical Date: 07/03/18 00:48
Analyst: MZ

Trap: EST, Carbopack B/Carboxen 1000&1001

Analytical Column: Restek, RTX-502.2, 105m, 0.53ID, 3um

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		ug/l	50.0	--	1
C9-C12 Aliphatics	ND		ug/l	50.0	--	1
C9-C10 Aromatics	ND		ug/l	50.0	--	1
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
Benzene	ND		ug/l	2.00	--	1
Toluene	ND		ug/l	2.00	--	1
Ethylbenzene	ND		ug/l	2.00	--	1
p/m-Xylene	ND		ug/l	2.00	--	1
o-Xylene	ND		ug/l	2.00	--	1
Methyl tert butyl ether	ND		ug/l	3.00	--	1
Naphthalene	ND		ug/l	4.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	78		70-130
2,5-Dibromotoluene-FID	86		70-130



Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-11
Client ID: FSL-14
Sample Location: BEVERLY, MA

Date Collected: 06/29/18 10:25
Date Received: 06/29/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water

Analytical Method: 98,EPH-04-1.1

Analytical Date: 07/08/18 22:17 M.S. Analytical Date: 07/10/18 23:31

Analyst: DG M.S. Analyst: CB

Extraction Method: EPA 3510C

Extraction Date: 07/05/18 02:20

Cleanup Method1: EPH-04-1

Cleanup Date1: 07/08/18

Quality Control Information

Condition of sample received:

Satisfactory

Aqueous Preservative:

Laboratory Provided Preserved

Sample Temperature upon receipt:

Container

Sample Extraction method:

Received on Ice

Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1
Naphthalene	0.910	B	ug/l	0.400	--	1
2-Methylnaphthalene	0.606	B	ug/l	0.400	--	1
Acenaphthylene	ND		ug/l	0.400	--	1
Acenaphthene	ND		ug/l	0.400	--	1
Fluorene	ND		ug/l	0.400	--	1
Phenanthrene	0.710		ug/l	0.400	--	1
Anthracene	ND		ug/l	0.400	--	1
Fluoranthene	0.444		ug/l	0.400	--	1
Pyrene	ND		ug/l	0.400	--	1
Benzo(a)anthracene	ND		ug/l	0.400	--	1
Chrysene	ND		ug/l	0.400	--	1
Benzo(b)fluoranthene	ND		ug/l	0.400	--	1
Benzo(k)fluoranthene	ND		ug/l	0.400	--	1
Benzo(a)pyrene	ND		ug/l	0.200	--	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.400	--	1
Benzo(ghi)perylene	ND		ug/l	0.400	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-11
 Client ID: FSL-14
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 10:25
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	73		40-140
o-Terphenyl	56		40-140
2-Fluorobiphenyl	63		40-140
2-Bromonaphthalene	64		40-140
O-Terphenyl-MS	86		40-140

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-12
Client ID: FSL-15
Sample Location: BEVERLY, MA

Date Collected: 06/29/18 15:30
Date Received: 06/29/18
Field Prep: Not Specified

Sample Depth:

Matrix: Water
Analytical Method: 131,VPH-18-2.1
Analytical Date: 07/03/18 01:28
Analyst: MZ

Trap: EST, Carbopack B/Carboxen 1000&1001

Analytical Column: Restek, RTX-502.2, 105m, 0.53ID, 3um

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Petroleum Hydrocarbons - Westborough Lab						
C5-C8 Aliphatics	ND		ug/l	50.0	--	1
C9-C12 Aliphatics	ND		ug/l	50.0	--	1
C9-C10 Aromatics	ND		ug/l	50.0	--	1
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	--	1
Benzene	ND		ug/l	2.00	--	1
Toluene	ND		ug/l	2.00	--	1
Ethylbenzene	ND		ug/l	2.00	--	1
p/m-Xylene	ND		ug/l	2.00	--	1
o-Xylene	ND		ug/l	2.00	--	1
Methyl tert butyl ether	ND		ug/l	3.00	--	1
Naphthalene	ND		ug/l	4.00	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	79		70-130
2,5-Dibromotoluene-FID	87		70-130



Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

SAMPLE RESULTS

Lab ID:	L1824997-12	Date Collected:	06/29/18 15:30
Client ID:	FSL-15	Date Received:	06/29/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1	Extraction Date:	07/08/18 07:23
Analytical Date:	07/10/18 16:09	Cleanup Method1:	EPH-04-1
Analyst:	DG	Cleanup Date1:	07/10/18
	M.S. Analyst:	CB	

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1
Naphthalene	ND		ug/l	0.400	--	1
2-Methylnaphthalene	ND		ug/l	0.400	--	1
Acenaphthylene	ND		ug/l	0.400	--	1
Acenaphthene	ND		ug/l	0.400	--	1
Fluorene	ND		ug/l	0.400	--	1
Phenanthrene	ND		ug/l	0.400	--	1
Anthracene	ND		ug/l	0.400	--	1
Fluoranthene	ND		ug/l	0.400	--	1
Pyrene	ND		ug/l	0.400	--	1
Benzo(a)anthracene	ND		ug/l	0.400	--	1
Chrysene	ND		ug/l	0.400	--	1
Benzo(b)fluoranthene	ND		ug/l	0.400	--	1
Benzo(k)fluoranthene	ND		ug/l	0.400	--	1
Benzo(a)pyrene	ND		ug/l	0.200	--	1
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.400	--	1
Benzo(ghi)perylene	ND		ug/l	0.400	--	1



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-12
 Client ID: FSL-15
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 15:30
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
EPH w/MS Targets - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	47		40-140
o-Terphenyl	71		40-140
2-Fluorobiphenyl	71		40-140
2-Bromonaphthalene	61		40-140
O-Terphenyl-MS	80		40-140

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 131,VPH-18-2.1
Analytical Date: 07/02/18 17:26
Analyst: KD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Petroleum Hydrocarbons - Westborough Lab for sample(s):	01-03,05-06,08-12		Batch:		
WG1132182-4					
C5-C8 Aliphatics	ND		ug/l	50.0	--
C9-C12 Aliphatics	ND		ug/l	50.0	--
C9-C10 Aromatics	ND		ug/l	50.0	--
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	--
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	--
Benzene	ND		ug/l	2.00	--
Toluene	ND		ug/l	2.00	--
Ethylbenzene	ND		ug/l	2.00	--
p/m-Xylene	ND		ug/l	2.00	--
o-Xylene	ND		ug/l	2.00	--
Methyl tert butyl ether	ND		ug/l	3.00	--
Naphthalene	ND		ug/l	4.00	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,5-Dibromotoluene-PID	80		70-130
2,5-Dibromotoluene-FID	88		70-130



Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Method Blank Analysis
Batch Quality Control

Analytical Method:	98,EPH-04-1.1	Extraction Method:	EPA 3510C
Analytical Date:	07/08/18 11:26	Extraction Date:	07/04/18 16:04
Analyst:	DG	M.S. Analyst:	DV
		Cleanup Method:	EPH-04-1
		Cleanup Date:	07/07/18

Parameter	Result	Qualifier	Units	RL	MDL
EPH w/MS Targets - Westborough Lab for sample(s):	01-06,08-11		Batch:	WG1132583-1	
C9-C18 Aliphatics	ND		ug/l	100	--
C19-C36 Aliphatics	ND		ug/l	100	--
C11-C22 Aromatics	ND		ug/l	100	--
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--
Naphthalene	0.688		ug/l	0.400	--
2-Methylnaphthalene	0.426		ug/l	0.400	--
Acenaphthylene	ND		ug/l	0.400	--
Acenaphthene	ND		ug/l	0.400	--
Fluorene	ND		ug/l	0.400	--
Phenanthrene	ND		ug/l	0.400	--
Anthracene	ND		ug/l	0.400	--
Fluoranthene	ND		ug/l	0.400	--
Pyrene	ND		ug/l	0.400	--
Benzo(a)anthracene	ND		ug/l	0.400	--
Chrysene	ND		ug/l	0.400	--
Benzo(b)fluoranthene	ND		ug/l	0.400	--
Benzo(k)fluoranthene	ND		ug/l	0.400	--
Benzo(a)pyrene	ND		ug/l	0.200	--
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	--
Dibenzo(a,h)anthracene	ND		ug/l	0.400	--
Benzo(ghi)perylene	ND		ug/l	0.400	--

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Method Blank Analysis
Batch Quality Control

Analytical Method:	98,EPH-04-1.1	Extraction Method:	EPA 3510C
Analytical Date:	07/08/18 11:26	Extraction Date:	07/04/18 16:04
Analyst:	DG	Cleanup Method:	EPH-04-1
		Cleanup Date:	07/07/18

Parameter	Result	Qualifier	Units	RL	MDL
EPH w/MS Targets - Westborough Lab for sample(s): 01-06,08-11			Batch:	WG1132583-1	

Surrogate	%Recovery	Acceptance Criteria	
		Qualifier	Criteria
Chloro-Octadecane	65		40-140
o-Terphenyl	52		40-140
2-Fluorobiphenyl	59		40-140
2-Bromonaphthalene	60		40-140
O-Terphenyl-MS	81		40-140

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Method Blank Analysis
Batch Quality Control

Analytical Method:	98,EPH-04-1.1	Extraction Method:	EPA 3510C
Analytical Date:	07/10/18 15:37	Extraction Date:	07/08/18 07:23
Analyst:	DG	M.S. Analyst:	CB
		Cleanup Method:	EPH-04-1
		Cleanup Date:	07/10/18

Parameter	Result	Qualifier	Units	RL	MDL
EPH w/MS Targets - Westborough Lab for sample(s):	12	Batch:	WG1133504-1		
C9-C18 Aliphatics	ND	ug/l	100	--	
C19-C36 Aliphatics	ND	ug/l	100	--	
C11-C22 Aromatics	ND	ug/l	100	--	
C11-C22 Aromatics, Adjusted	ND	ug/l	100	--	
Naphthalene	ND	ug/l	0.400	--	
2-Methylnaphthalene	ND	ug/l	0.400	--	
Acenaphthylene	ND	ug/l	0.400	--	
Acenaphthene	ND	ug/l	0.400	--	
Fluorene	ND	ug/l	0.400	--	
Phenanthrene	ND	ug/l	0.400	--	
Anthracene	ND	ug/l	0.400	--	
Fluoranthene	ND	ug/l	0.400	--	
Pyrene	ND	ug/l	0.400	--	
Benzo(a)anthracene	ND	ug/l	0.400	--	
Chrysene	ND	ug/l	0.400	--	
Benzo(b)fluoranthene	ND	ug/l	0.400	--	
Benzo(k)fluoranthene	ND	ug/l	0.400	--	
Benzo(a)pyrene	ND	ug/l	0.200	--	
Indeno(1,2,3-cd)Pyrene	ND	ug/l	0.400	--	
Dibenzo(a,h)anthracene	ND	ug/l	0.400	--	
Benzo(ghi)perylene	ND	ug/l	0.400	--	

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 98,EPH-04-1.1
Analytical Date: 07/10/18 15:37
Analyst: DG

07/10/18 21:52
CB

Extraction Method: EPA 3510C
Extraction Date: 07/08/18 07:23
Cleanup Method: EPH-04-1
Cleanup Date: 07/10/18

Parameter	Result	Qualifier	Units	RL	MDL
EPH w/MS Targets - Westborough Lab for sample(s):	12	Batch:	WG1133504-1		

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	64		40-140
o-Terphenyl	78		40-140
2-Fluorobiphenyl	71		40-140
2-Bromonaphthalene	62		40-140
O-Terphenyl-MS	82		40-140

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 131,VPH-18-2.1
Analytical Date: 07/07/18 10:26
Analyst: MZ

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Petroleum Hydrocarbons - Westborough Lab for sample(s): 04 Batch: WG1133784-4					
C5-C8 Aliphatics	ND		ug/l	50.0	--
C9-C12 Aliphatics	ND		ug/l	50.0	--
C9-C10 Aromatics	ND		ug/l	50.0	--
C5-C8 Aliphatics, Adjusted	ND		ug/l	50.0	--
C9-C12 Aliphatics, Adjusted	ND		ug/l	50.0	--
Benzene	ND		ug/l	2.00	--
Toluene	ND		ug/l	2.00	--
Ethylbenzene	ND		ug/l	2.00	--
p/m-Xylene	ND		ug/l	2.00	--
o-Xylene	ND		ug/l	2.00	--
Methyl tert butyl ether	ND		ug/l	3.00	--
Naphthalene	ND		ug/l	4.00	--

Surrogate	%Recovery	Qualifier	Acceptance
			Criteria
2,5-Dibromotoluene-PID	94		70-130
2,5-Dibromotoluene-FID	108		70-130

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Method Blank Analysis
Batch Quality Control

Analytical Method:	98,EPH-04-1.1	Extraction Method:	EPA 3510C
Analytical Date:	07/13/18 15:38	Extraction Date:	07/12/18 10:59
Analyst:	DG	M.S. Analyst:	DV
		Cleanup Method:	EPH-04-1
		Cleanup Date:	07/12/18

Parameter	Result	Qualifier	Units	RL	MDL
EPH w/MS Targets - Westborough Lab for sample(s): 02,09 Batch: WG1134950-1					
C9-C18 Aliphatics	ND		ug/l	100	--
C19-C36 Aliphatics	ND		ug/l	100	--
C11-C22 Aromatics	ND		ug/l	100	--
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--
Naphthalene	ND		ug/l	0.400	--
2-Methylnaphthalene	ND		ug/l	0.400	--
Acenaphthylene	ND		ug/l	0.400	--
Acenaphthene	ND		ug/l	0.400	--
Fluorene	ND		ug/l	0.400	--
Phenanthrene	ND		ug/l	0.400	--
Anthracene	ND		ug/l	0.400	--
Fluoranthene	ND		ug/l	0.400	--
Pyrene	ND		ug/l	0.400	--
Benzo(a)anthracene	ND		ug/l	0.400	--
Chrysene	ND		ug/l	0.400	--
Benzo(b)fluoranthene	ND		ug/l	0.400	--
Benzo(k)fluoranthene	ND		ug/l	0.400	--
Benzo(a)pyrene	ND		ug/l	0.200	--
Indeno(1,2,3-cd)Pyrene	ND		ug/l	0.400	--
Dibenzo(a,h)anthracene	ND		ug/l	0.400	--
Benzo(ghi)perylene	ND		ug/l	0.400	--

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Method Blank Analysis Batch Quality Control

Analytical Method:	98,EPH-04-1.1	Extraction Method:	EPA 3510C
Analytical Date:	07/13/18 15:38	Extraction Date:	07/12/18 10:59
Analyst:	DG	Cleanup Method:	EPH-04-1
		Cleanup Date:	07/12/18

Parameter	Result	Qualifier	Units	RL	MDL
EPH w/MS Targets - Westborough Lab for sample(s): 02,09		Batch:	WG1134950-1		

Surrogate	%Recovery	Acceptance Criteria	
		Qualifier	Criteria
Chloro-Octadecane	57		40-140
o-Terphenyl	88		40-140
2-Fluorobiphenyl	84		40-140
2-Bromonaphthalene	80		40-140
O-Terphenyl-MS	91		40-140

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 01-03,05-06,08-12 Batch: WG1132182-2 WG1132182-3								
C5-C8 Aliphatics	99		97		70-130	2		25
C9-C12 Aliphatics	97		93		70-130	4		25
C9-C10 Aromatics	93		88		70-130	6		25
Benzene	93		90		70-130	3		25
Toluene	94		90		70-130	4		25
Ethylbenzene	91		88		70-130	3		25
p/m-Xylene	95		92		70-130	4		25
o-Xylene	92		89		70-130	3		25
Methyl tert butyl ether	96		95		70-130	1		25
Naphthalene	98		99		70-130	1		25
1,2,4-Trimethylbenzene	93		88		70-130	6		25
Pentane	98		95		70-130	3		25
2-Methylpentane	100		97		70-130	3		25
2,2,4-Trimethylpentane	101		99		70-130	2		25
n-Nonane	90		86		30-130	4		25
n-Decane	101		95		70-130	6		25
n-Butylcyclohexane	105		101		70-130	4		25

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,5-Dibromotoluene-PID	92		90		70-130
2,5-Dibromotoluene-FID	99		98		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
EPH w/MS Targets - Westborough Lab Associated sample(s): 01-06,08-11 Batch: WG1132583-2 WG1132583-3								
C9-C18 Aliphatics	80		77		40-140	4		25
C19-C36 Aliphatics	94		93		40-140	1		25
C11-C22 Aromatics	66		64		40-140	3		25
Naphthalene	121		88		40-140	32	Q	25
2-Methylnaphthalene	120		86		40-140	33	Q	25
Acenaphthylene	128		92		40-140	33	Q	25
Acenaphthene	137		98		40-140	33	Q	25
Fluorene	146	Q	104		40-140	34	Q	25
Phenanthrene	134		94		40-140	35	Q	25
Anthracene	138		96		40-140	36	Q	25
Fluoranthene	141	Q	100		40-140	34	Q	25
Pyrene	142	Q	102		40-140	33	Q	25
Benzo(a)anthracene	140		100		40-140	33	Q	25
Chrysene	157	Q	110		40-140	35	Q	25
Benzo(b)fluoranthene	142	Q	101		40-140	34	Q	25
Benzo(k)fluoranthene	142	Q	101		40-140	34	Q	25
Benzo(a)pyrene	135		96		40-140	34	Q	25
Indeno(1,2,3-cd)Pyrene	130		91		40-140	35	Q	25
Dibenzo(a,h)anthracene	134		101		40-140	28	Q	25
Benzo(ghi)perylene	120		84		40-140	35	Q	25
Nonane (C9)	51		53		30-140	4		25
Decane (C10)	62		65		40-140	5		25
Dodecane (C12)	71		73		40-140	3		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
EPH w/MS Targets - Westborough Lab Associated sample(s): 01-06,08-11 Batch: WG1132583-2 WG1132583-3								
Tetradecane (C14)	78		80		40-140	3		25
Hexadecane (C16)	82		84		40-140	2		25
Octadecane (C18)	86		88		40-140	2		25
Nonadecane (C19)	87		88		40-140	1		25
Eicosane (C20)	88		88		40-140	0		25
Docosane (C22)	88		88		40-140	0		25
Tetracosane (C24)	86		87		40-140	1		25
Hexacosane (C26)	87		87		40-140	0		25
Octacosane (C28)	86		87		40-140	1		25
Triacontane (C30)	87		87		40-140	0		25
Hexatriacontane (C36)	90		88		40-140	2		25

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Chloro-Octadecane	68		72		40-140
o-Terphenyl	58		57		40-140
2-Fluorobiphenyl	67		62		40-140
2-Bromonaphthalene	68		63		40-140
O-Terphenyl-MS	157	Q	116		40-140
% Naphthalene Breakthrough	0		0		
% 2-Methylnaphthalene Breakthrough	0		0		

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
EPH w/MS Targets - Westborough Lab Associated sample(s): 12 Batch: WG1133504-2 WG1133504-3								
C9-C18 Aliphatics	77		77		40-140	0		25
C19-C36 Aliphatics	88		86		40-140	2		25
C11-C22 Aromatics	86		87		40-140	1		25
Naphthalene	92		78		40-140	16		25
2-Methylnaphthalene	99		84		40-140	16		25
Acenaphthylene	118		98		40-140	19		25
Acenaphthene	115		98		40-140	16		25
Fluorene	126		105		40-140	18		25
Phenanthrene	124		106		40-140	16		25
Anthracene	138		119		40-140	15		25
Fluoranthene	140		122		40-140	14		25
Pyrene	144	Q	126		40-140	13		25
Benzo(a)anthracene	130		114		40-140	13		25
Chrysene	126		114		40-140	10		25
Benzo(b)fluoranthene	136		123		40-140	10		25
Benzo(k)fluoranthene	134		119		40-140	12		25
Benzo(a)pyrene	142	Q	125		40-140	13		25
Indeno(1,2,3-cd)Pyrene	142	Q	125		40-140	13		25
Dibenzo(a,h)anthracene	142	Q	129		40-140	10		25
Benzo(ghi)perylene	130		117		40-140	11		25
Nonane (C9)	61		63		30-140	3		25
Decane (C10)	66		70		40-140	6		25
Dodecane (C12)	71		74		40-140	4		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
EPH w/MS Targets - Westborough Lab Associated sample(s): 12 Batch: WG1133504-2 WG1133504-3								
Tetradecane (C14)	76		77		40-140	1		25
Hexadecane (C16)	79		79		40-140	0		25
Octadecane (C18)	84		82		40-140	2		25
Nonadecane (C19)	83		82		40-140	1		25
Eicosane (C20)	85		83		40-140	2		25
Docosane (C22)	85		83		40-140	2		25
Tetracosane (C24)	85		83		40-140	2		25
Hexacosane (C26)	86		84		40-140	2		25
Octacosane (C28)	86		84		40-140	2		25
Triacontane (C30)	86		83		40-140	4		25
Hexatriacontane (C36)	87		84		40-140	4		25

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Chloro-Octadecane	68		68		40-140
o-Terphenyl	86		85		40-140
2-Fluorobiphenyl	80		77		40-140
2-Bromonaphthalene	73		70		40-140
O-Terphenyl-MS	122		104		40-140
% Naphthalene Breakthrough	0		0		
% 2-Methylnaphthalene Breakthrough	0		0		

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 04 Batch: WG1133784-2 WG1133784-3								
C5-C8 Aliphatics	104		103		70-130	1		25
C9-C12 Aliphatics	106		105		70-130	1		25
C9-C10 Aromatics	91		90		70-130	1		25
Benzene	92		90		70-130	1		25
Toluene	92		91		70-130	1		25
Ethylbenzene	97		96		70-130	1		25
p/m-Xylene	95		93		70-130	1		25
o-Xylene	92		91		70-130	1		25
Methyl tert butyl ether	91		89		70-130	2		25
Naphthalene	90		88		70-130	2		25
1,2,4-Trimethylbenzene	91		90		70-130	1		25
Pentane	115		110		70-130	4		25
2-Methylpentane	101		99		70-130	2		25
2,2,4-Trimethylpentane	105		103		70-130	2		25
n-Nonane	107		105		30-130	2		25
n-Decane	107		106		70-130	1		25
n-Butylcyclohexane	104		104		70-130	0		25

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,5-Dibromotoluene-PID	99		98		70-130
2,5-Dibromotoluene-FID	113		112		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
EPH w/MS Targets - Westborough Lab Associated sample(s): 02,09 Batch: WG1134950-2 WG1134950-3								
C9-C18 Aliphatics	75		77		40-140	3		25
C19-C36 Aliphatics	84		92		40-140	9		25
C11-C22 Aromatics	92		99		40-140	7		25
Naphthalene	78		83		40-140	6		25
2-Methylnaphthalene	80		86		40-140	7		25
Acenaphthylene	90		98		40-140	9		25
Acenaphthene	91		100		40-140	9		25
Fluorene	96		104		40-140	8		25
Phenanthrene	95		102		40-140	7		25
Anthracene	105		113		40-140	7		25
Fluoranthene	106		114		40-140	7		25
Pyrene	109		117		40-140	7		25
Benzo(a)anthracene	94		101		40-140	7		25
Chrysene	99		106		40-140	7		25
Benzo(b)fluoranthene	99		104		40-140	5		25
Benzo(k)fluoranthene	110		114		40-140	4		25
Benzo(a)pyrene	105		110		40-140	5		25
Indeno(1,2,3-cd)Pyrene	103		108		40-140	5		25
Dibenzo(a,h)anthracene	106		111		40-140	5		25
Benzo(ghi)perylene	95		98		40-140	3		25
Nonane (C9)	55		55		30-140	0		25
Decane (C10)	62		63		40-140	2		25
Dodecane (C12)	71		73		40-140	3		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
EPH w/MS Targets - Westborough Lab Associated sample(s): 02,09 Batch: WG1134950-2 WG1134950-3								
Tetradecane (C14)	76		80		40-140	5		25
Hexadecane (C16)	79		83		40-140	5		25
Octadecane (C18)	85		89		40-140	5		25
Nonadecane (C19)	83		88		40-140	6		25
Eicosane (C20)	85		90		40-140	6		25
Docosane (C22)	85		90		40-140	6		25
Tetracosane (C24)	85		90		40-140	6		25
Hexacosane (C26)	86		91		40-140	6		25
Octacosane (C28)	86		91		40-140	6		25
Triacontane (C30)	86		91		40-140	6		25
Hexatriacontane (C36)	88		92		40-140	4		25

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Chloro-Octadecane	60		67		40-140
o-Terphenyl	86		93		40-140
2-Fluorobiphenyl	83		88		40-140
2-Bromonaphthalene	81		86		40-140
O-Terphenyl-MS	89		94		40-140
% Naphthalene Breakthrough	0		0		
% 2-Methylnaphthalene Breakthrough	0		0		

Matrix Spike Analysis
Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	RPD Qual	RPD Limits
Volatile Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 01-03,05-06,08-12 QC Batch ID: WG1132182-5 WG1132182-6 QC Sample: L1824997-05 Client ID: FSL-11												
C5-C8 Aliphatics	ND	300	261	87		272	91		70-130	4		50
C9-C12 Aliphatics	ND	400	398	100		406	102		70-130	2		50
C9-C10 Aromatics	ND	100	82.9	83		83.6	84		70-130	1		50
Benzene	ND	50	38.8	78		40.2	80		70-130	4		50
Toluene	ND	50	39.1	78		40.4	81		70-130	3		50
Ethylbenzene	ND	50	40.5	81		41.8	84		70-130	3		50
p/m-Xylene	ND	100	82.3	82		84.6	85		70-130	3		50
o-Xylene	ND	50	39.6	79		40.5	81		70-130	2		50
Methyl tert butyl ether	ND	50	46.0	92		45.9	92		70-130	0		50
Naphthalene	ND	50	47.8	96		48.6	97		70-130	2		50
1,2,4-Trimethylbenzene	ND	50	40.2	80		39.1	78		70-130	3		50
Pentane	ND	50	37.4	75		39.9	80		70-130	6		50
2-Methylpentane	ND	50	38.2	76		40.6	81		70-130	6		50
2,2,4-Trimethylpentane	ND	50	39.9	80		42.1	84		70-130	5		50
n-Nonane	ND	50	34.8	70		36.0	72		30-130	3		50
n-Decane	ND	50	39.3	79		39.1	78		70-130	1		50
n-Butylcyclohexane	ND	50	41.0	82		42.2	84		70-130	3		50

Surrogate	MS			MSD			Acceptance Criteria	
	% Recovery	Qualifier	% Recovery	Qualifier	% Recovery	Qualifier		
2,5-Dibromotoluene-FID	89		91		70-130			
2,5-Dibromotoluene-PID	81		82		70-130			

Matrix Spike Analysis
Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	RPD Qual	RPD Limits
EPH w/MS Targets - Westborough Lab Associated sample(s): 01-06,08-11 QC Batch ID: WG1132583-4 WG1132583-5 QC Sample: L1824997-05 Client ID: FSL-11												
C9-C18 Aliphatics	ND	600	375	62		394	66		40-140	5		50
C19-C36 Aliphatics	ND	800	705	88		760	95		40-140	8		50
C11-C22 Aromatics	ND	1700	963	57		1040	61		40-140	8		50
Naphthalene	0.598B	100	80.8	80		89.4	89		40-140	10		50
2-Methylnaphthalene	ND	100	87.6	88		97.1	97		40-140	10		50
Acenaphthylene	ND	100	101	101		117	117		40-140	15		50
Acenaphthene	ND	100	107	107		125	125		40-140	16		50
Fluorene	ND	100	116	116		139	139		40-140	18		50
Phenanthrene	ND	100	99.0	99		122	122		40-140	21		50
Anthracene	ND	100	104	104		131	131		40-140	23		50
Fluoranthene	ND	100	100	100		127	127		40-140	24		50
Pyrene	ND	100	102	102		128	128		40-140	23		50
Benzo(a)anthracene	ND	100	89.3	89		115	115		40-140	25		50
Chrysene	ND	100	96.1	96		118	118		40-140	20		50
Benzo(b)fluoranthene	ND	100	81.4	81		108	108		40-140	28		50
Benzo(k)fluoranthene	ND	100	86.8	87		110	110		40-140	24		50
Benzo(a)pyrene	ND	100	79.3	79		103	103		40-140	26		50
Indeno(1,2,3-cd)Pyrene	ND	100	70.1	70		91.9	92		40-140	27		50
Dibenzo(a,h)anthracene	ND	100	75.7	76		92.3	92		40-140	20		50
Benzo(ghi)perylene	ND	100	67.0	67		86.3	86		40-140	25		50
Nonane (C9)	ND	100	33.5	34		36.1	36		30-140	7		50
Decane (C10)	ND	100	41.4	41		43.8	44		40-140	6		50
Dodecane (C12)	ND	100	52.5	52		52.6	53		40-140	0		50

Matrix Spike Analysis
Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	RPD Qual	RPD Limits
EPH w/MS Targets - Westborough Lab Associated sample(s): 01-06,08-11 QC Batch ID: WG1132583-4 WG1132583-5 QC Sample: L1824997-05 Client ID: FSL-11												
Tetradecane (C14)	ND	100	67.4	67		66.9	67		40-140	1		50
Hexadecane (C16)	ND	100	77.4	77		79.2	79		40-140	2		50
Octadecane (C18)	ND	100	82.6	83		87.1	87		40-140	5		50
Nonadecane (C19)	ND	100	83.9	84		88.6	89		40-140	5		50
Eicosane (C20)	ND	100	85.2	85		90.8	91		40-140	6		50
Docosane (C22)	ND	100	85.7	86		91.5	92		40-140	7		50
Tetracosane (C24)	ND	100	84.8	85		90.6	91		40-140	7		50
Hexacosane (C26)	ND	100	85.0	85		90.4	90		40-140	6		50
Octacosane (C28)	ND	100	84.4	84		89.7	90		40-140	6		50
Triacontane (C30)	ND	100	84.9	85		90.0	90		40-140	6		50
Hexatriacontane (C36)	ND	100	86.5	86		91.4	91		40-140	6		50

Surrogate	MS		MSD		Acceptance Criteria
	% Recovery	Qualifier	% Recovery	Qualifier	
2-Bromonaphthalene	71		70		40-140
2-Fluorobiphenyl	70		69		40-140
Chloro-Octadecane	50		62		40-140
O-Terphenyl-MS	125		157	Q	40-140
o-Terphenyl	61		65		40-140

PCBS



Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-01
 Client ID: FSL-4
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 09:20
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 07/10/18 15:39
 Analyst: MJS

Extraction Method: EPA 3510C
 Extraction Date: 07/06/18 18:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB Homologs by GC/MS-SIM - Mansfield Lab						
Monochlorobiphenyls	ND		ng/l	0.526	--	1
Dichlorobiphenyls	ND		ng/l	0.526	--	1
Trichlorobiphenyls	ND		ng/l	0.526	--	1
Tetrachlorobiphenyls	ND		ng/l	0.526	--	1
Pentachlorobiphenyls	ND		ng/l	0.526	--	1
Hexachlorobiphenyls	ND		ng/l	0.526	--	1
Heptachlorobiphenyls	ND		ng/l	0.526	--	1
Octachlorobiphenyls	ND		ng/l	0.526	--	1
Nonachlorobiphenyls	ND		ng/l	0.526	--	1
Decachlorobiphenyl	ND		ng/l	0.526	--	1
Total Homologs	ND		ng/l	0.526	--	1
Surrogate						
CI3-BZ#19-C13		84			50-125	
CI8-BZ#202-C13		76			50-125	

Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-02
 Client ID: FSL-5
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 10:20
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 07/10/18 16:55
 Analyst: MJS

Extraction Method: EPA 3510C
 Extraction Date: 07/06/18 18:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB Homologs by GC/MS-SIM - Mansfield Lab						
Monochlorobiphenyls	ND		ng/l	0.521	--	1
Dichlorobiphenyls	11.6		ng/l	0.521	--	1
Trichlorobiphenyls	23.5	B	ng/l	0.521	--	1
Tetrachlorobiphenyls	28.1	B	ng/l	0.521	--	1
Pentachlorobiphenyls	80.1		ng/l	0.521	--	1
Hexachlorobiphenyls	77.0		ng/l	0.521	--	1
Heptachlorobiphenyls	25.6		ng/l	0.521	--	1
Octachlorobiphenyls	13.2		ng/l	0.521	--	1
Nonachlorobiphenyls	ND		ng/l	0.521	--	1
Decachlorobiphenyl	ND		ng/l	0.521	--	1
Total Homologs	259		ng/l	0.521	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
CI3-BZ#19-C13	44	Q	50-125
CI8-BZ#202-C13	42	Q	50-125

Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-02 RE
 Client ID: FSL-5
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 10:20
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 07/15/18 14:58
 Analyst: SV

Extraction Method: EPA 3510C
 Extraction Date: 07/14/18 12:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB Homologs by GC/MS-SIM - Mansfield Lab						
Monochlorobiphenyls	ND		ng/l	0.521	--	1
Dichlorobiphenyls	2.07		ng/l	0.521	--	1
Trichlorobiphenyls	1.57		ng/l	0.521	--	1
Tetrachlorobiphenyls	8.38		ng/l	0.521	--	1
Pentachlorobiphenyls	22.5		ng/l	0.521	--	1
Hexachlorobiphenyls	17.6		ng/l	0.521	--	1
Heptachlorobiphenyls	6.56		ng/l	0.521	--	1
Octachlorobiphenyls	ND		ng/l	0.521	--	1
Nonachlorobiphenyls	ND		ng/l	0.521	--	1
Decachlorobiphenyl	ND		ng/l	0.521	--	1
Total Homologs	58.7		ng/l	0.521	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
CI3-BZ#19-C13	65		50-125
CI8-BZ#202-C13	72		50-125

Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-05

Date Collected: 06/29/18 13:45

Client ID: FSL-11

Date Received: 06/29/18

Sample Location: BEVERLY, MA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Extraction Method: EPA 3510C

Analytical Method: 105,8270D-SIM/680(M)

Extraction Date: 07/06/18 18:00

Analytical Date: 07/10/18 18:10

Analyst: MJS

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB Homologs by GC/MS-SIM - Mansfield Lab						
Monochlorobiphenyls	ND		ng/l	0.515	--	1
Dichlorobiphenyls	ND		ng/l	0.515	--	1
Trichlorobiphenyls	ND		ng/l	0.515	--	1
Tetrachlorobiphenyls	ND		ng/l	0.515	--	1
Pentachlorobiphenyls	ND		ng/l	0.515	--	1
Hexachlorobiphenyls	ND		ng/l	0.515	--	1
Heptachlorobiphenyls	ND		ng/l	0.515	--	1
Octachlorobiphenyls	ND		ng/l	0.515	--	1
Nonachlorobiphenyls	ND		ng/l	0.515	--	1
Decachlorobiphenyl	ND		ng/l	0.515	--	1
Total Homologs	ND		ng/l	0.515	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
CI3-BZ#19-C13	83		50-125
CI8-BZ#202-C13	86		50-125

Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-06
 Client ID: DUPLICATE
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 09:20
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 07/10/18 21:58
 Analyst: MJS

Extraction Method: EPA 3510C
 Extraction Date: 07/06/18 18:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB Homologs by GC/MS-SIM - Mansfield Lab						
Monochlorobiphenyls	ND		ng/l	0.515	--	1
Dichlorobiphenyls	ND		ng/l	0.515	--	1
Trichlorobiphenyls	ND		ng/l	0.515	--	1
Tetrachlorobiphenyls	ND		ng/l	0.515	--	1
Pentachlorobiphenyls	ND		ng/l	0.515	--	1
Hexachlorobiphenyls	ND		ng/l	0.515	--	1
Heptachlorobiphenyls	ND		ng/l	0.515	--	1
Octachlorobiphenyls	ND		ng/l	0.515	--	1
Nonachlorobiphenyls	ND		ng/l	0.515	--	1
Decachlorobiphenyl	ND		ng/l	0.515	--	1
Total Homologs	ND		ng/l	0.515	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
CI3-BZ#19-C13	83		50-125
CI8-BZ#202-C13	76		50-125

Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-07
 Client ID: FSL-1
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 09:30
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 07/10/18 23:15
 Analyst: MJS

Extraction Method: EPA 3510C
 Extraction Date: 07/06/18 18:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB Homologs by GC/MS-SIM - Mansfield Lab						
Monochlorobiphenyls	ND		ng/l	0.505	--	1
Dichlorobiphenyls	ND		ng/l	0.505	--	1
Trichlorobiphenyls	ND		ng/l	0.505	--	1
Tetrachlorobiphenyls	ND		ng/l	0.505	--	1
Pentachlorobiphenyls	ND		ng/l	0.505	--	1
Hexachlorobiphenyls	ND		ng/l	0.505	--	1
Heptachlorobiphenyls	ND		ng/l	0.505	--	1
Octachlorobiphenyls	ND		ng/l	0.505	--	1
Nonachlorobiphenyls	ND		ng/l	0.505	--	1
Decachlorobiphenyl	ND		ng/l	0.505	--	1
Total Homologs	ND		ng/l	0.505	--	1
Surrogate						
CI3-BZ#19-C13		% Recovery		Qualifer	Acceptance Criteria	
CI8-BZ#202-C13	85				50-125	
	82				50-125	

Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-08
 Client ID: FSL-12
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 11:45
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 07/11/18 02:52
 Analyst: MJS

Extraction Method: EPA 3510C
 Extraction Date: 07/06/18 18:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB Homologs by GC/MS-SIM - Mansfield Lab						
Monochlorobiphenyls	ND		ng/l	0.505	--	1
Dichlorobiphenyls	ND		ng/l	0.505	--	1
Trichlorobiphenyls	ND		ng/l	0.505	--	1
Tetrachlorobiphenyls	ND		ng/l	0.505	--	1
Pentachlorobiphenyls	ND		ng/l	0.505	--	1
Hexachlorobiphenyls	ND		ng/l	0.505	--	1
Heptachlorobiphenyls	ND		ng/l	0.505	--	1
Octachlorobiphenyls	ND		ng/l	0.505	--	1
Nonachlorobiphenyls	ND		ng/l	0.505	--	1
Decachlorobiphenyl	ND		ng/l	0.505	--	1
Total Homologs	ND		ng/l	0.505	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
CI3-BZ#19-C13	49	Q	50-125
CI8-BZ#202-C13	45	Q	50-125

Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-08 RE
 Client ID: FSL-12
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 11:45
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 07/15/18 16:14
 Analyst: SV

Extraction Method: EPA 3510C
 Extraction Date: 07/14/18 12:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB Homologs by GC/MS-SIM - Mansfield Lab						
Monochlorobiphenyls	ND		ng/l	0.505	--	1
Dichlorobiphenyls	ND		ng/l	0.505	--	1
Trichlorobiphenyls	ND		ng/l	0.505	--	1
Tetrachlorobiphenyls	ND		ng/l	0.505	--	1
Pentachlorobiphenyls	ND		ng/l	0.505	--	1
Hexachlorobiphenyls	ND		ng/l	0.505	--	1
Heptachlorobiphenyls	ND		ng/l	0.505	--	1
Octachlorobiphenyls	ND		ng/l	0.505	--	1
Nonachlorobiphenyls	ND		ng/l	0.505	--	1
Decachlorobiphenyl	ND		ng/l	0.505	--	1
Total Homologs	ND		ng/l	0.505	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
CI3-BZ#19-C13	30	Q	50-125
CI8-BZ#202-C13	25	Q	50-125

Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-09
 Client ID: DUPLICATE
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 11:45
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 07/11/18 04:08
 Analyst: MJS

Extraction Method: EPA 3510C
 Extraction Date: 07/06/18 18:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB Homologs by GC/MS-SIM - Mansfield Lab						
Monochlorobiphenyls	ND		ng/l	0.515	--	1
Dichlorobiphenyls	ND		ng/l	0.515	--	1
Trichlorobiphenyls	ND		ng/l	0.515	--	1
Tetrachlorobiphenyls	ND		ng/l	0.515	--	1
Pentachlorobiphenyls	ND		ng/l	0.515	--	1
Hexachlorobiphenyls	ND		ng/l	0.515	--	1
Heptachlorobiphenyls	ND		ng/l	0.515	--	1
Octachlorobiphenyls	ND		ng/l	0.515	--	1
Nonachlorobiphenyls	ND		ng/l	0.515	--	1
Decachlorobiphenyl	ND		ng/l	0.515	--	1
Total Homologs	ND		ng/l	0.515	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
CI3-BZ#19-C13	55		50-125
CI8-BZ#202-C13	51		50-125

Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-10
 Client ID: FSL-13
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 13:35
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 07/11/18 05:24
 Analyst: MJS

Extraction Method: EPA 3510C
 Extraction Date: 07/06/18 18:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB Homologs by GC/MS-SIM - Mansfield Lab						
Monochlorobiphenyls	ND		ng/l	0.500	--	1
Dichlorobiphenyls	ND		ng/l	0.500	--	1
Trichlorobiphenyls	ND		ng/l	0.500	--	1
Tetrachlorobiphenyls	ND		ng/l	0.500	--	1
Pentachlorobiphenyls	3.23	B	ng/l	0.500	--	1
Hexachlorobiphenyls	1.18	B	ng/l	0.500	--	1
Heptachlorobiphenyls	ND		ng/l	0.500	--	1
Octachlorobiphenyls	ND		ng/l	0.500	--	1
Nonachlorobiphenyls	ND		ng/l	0.500	--	1
Decachlorobiphenyl	ND		ng/l	0.500	--	1
Total Homologs	4.41	B	ng/l	0.500	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
CI3-BZ#19-C13	63		50-125
CI8-BZ#202-C13	60		50-125

Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-10 RE
 Client ID: FSL-13
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 13:35
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 07/15/18 17:30
 Analyst: SV

Extraction Method: EPA 3510C
 Extraction Date: 07/14/18 12:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB Homologs by GC/MS-SIM - Mansfield Lab						
Monochlorobiphenyls	ND		ng/l	0.500	--	1
Dichlorobiphenyls	ND		ng/l	0.500	--	1
Trichlorobiphenyls	ND		ng/l	0.500	--	1
Tetrachlorobiphenyls	ND		ng/l	0.500	--	1
Pentachlorobiphenyls	2.73		ng/l	0.500	--	1
Hexachlorobiphenyls	1.29		ng/l	0.500	--	1
Heptachlorobiphenyls	ND		ng/l	0.500	--	1
Octachlorobiphenyls	ND		ng/l	0.500	--	1
Nonachlorobiphenyls	ND		ng/l	0.500	--	1
Decachlorobiphenyl	ND		ng/l	0.500	--	1
Total Homologs	4.02		ng/l	0.500	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
CI3-BZ#19-C13	51		50-125
CI8-BZ#202-C13	48	Q	50-125

Project Name: CUMMINGS BEVERLY

Lab Number: L1824997

Project Number: Not Specified

Report Date: 07/16/18

SAMPLE RESULTS

Lab ID: L1824997-11
 Client ID: FSL-14
 Sample Location: BEVERLY, MA

Date Collected: 06/29/18 10:25
 Date Received: 06/29/18
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 105,8270D-SIM/680(M)
 Analytical Date: 07/11/18 06:40
 Analyst: MJS

Extraction Method: EPA 3510C
 Extraction Date: 07/06/18 18:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PCB Homologs by GC/MS-SIM - Mansfield Lab						
Monochlorobiphenyls	ND		ng/l	0.500	--	1
Dichlorobiphenyls	ND		ng/l	0.500	--	1
Trichlorobiphenyls	ND		ng/l	0.500	--	1
Tetrachlorobiphenyls	ND		ng/l	0.500	--	1
Pentachlorobiphenyls	ND		ng/l	0.500	--	1
Hexachlorobiphenyls	ND		ng/l	0.500	--	1
Heptachlorobiphenyls	ND		ng/l	0.500	--	1
Octachlorobiphenyls	ND		ng/l	0.500	--	1
Nonachlorobiphenyls	ND		ng/l	0.500	--	1
Decachlorobiphenyl	ND		ng/l	0.500	--	1
Total Homologs	ND		ng/l	0.500	--	1
Surrogate						
CI3-BZ#19-C13		% Recovery		Qualifer	Acceptance Criteria	
CI8-BZ#202-C13		78			50-125	
		87			50-125	

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)
Analytical Date: 07/10/18 11:52
Analyst: MJS

Extraction Method: EPA 3510C
Extraction Date: 07/06/18 18:00

Parameter	Result	Qualifier	Units	RL	MDL
PCB Homologs by GC/MS-SIM - Mansfield Lab for sample(s): 01-02,05-11 Batch: WG1133237-1					
Monochlorobiphenyls	ND		ng/l	0.500	--
Dichlorobiphenyls	ND		ng/l	0.500	--
Trichlorobiphenyls	3.77		ng/l	0.500	--
Tetrachlorobiphenyls	4.61		ng/l	0.500	--
Pentachlorobiphenyls	4.22		ng/l	0.500	--
Hexachlorobiphenyls	1.33		ng/l	0.500	--
Heptachlorobiphenyls	ND		ng/l	0.500	--
Octachlorobiphenyls	ND		ng/l	0.500	--
Nonachlorobiphenyls	ND		ng/l	0.500	--
Decachlorobiphenyl	ND		ng/l	0.500	--
Total Homologs	13.9		ng/l	0.500	--

Surrogate	%Recovery	Qualifier	Acceptance
			Criteria
Cl3-BZ#19-C13	87		50-125
Cl8-BZ#202-C13	93		50-125

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Method Blank Analysis Batch Quality Control

Analytical Method: 105,8270D-SIM/680(M)
Analytical Date: 07/15/18 11:10
Analyst: SV

Extraction Method: EPA 3510C
Extraction Date: 07/14/18 12:00

Parameter	Result	Qualifier	Units	RL	MDL
PCB Homologs by GC/MS-SIM - Mansfield Lab for sample(s): 02,08,10 Batch: WG1135723-1					
Monochlorobiphenyls	ND		ng/l	0.500	--
Dichlorobiphenyls	ND		ng/l	0.500	--
Trichlorobiphenyls	ND		ng/l	0.500	--
Tetrachlorobiphenyls	ND		ng/l	0.500	--
Pentachlorobiphenyls	ND		ng/l	0.500	--
Hexachlorobiphenyls	ND		ng/l	0.500	--
Heptachlorobiphenyls	ND		ng/l	0.500	--
Octachlorobiphenyls	ND		ng/l	0.500	--
Nonachlorobiphenyls	ND		ng/l	0.500	--
Decachlorobiphenyl	ND		ng/l	0.500	--
Total Homologs	ND		ng/l	0.500	--

Surrogate	%Recovery	Qualifier	Acceptance
			Criteria
Cl3-BZ#19-C13	86		50-125
Cl8-BZ#202-C13	89		50-125

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab Associated sample(s): 01-02,05-11 Batch: WG1133237-2 WG1133237-3								
Cl1-BZ#1	77		66		40-140	15		30
Cl1-BZ#2	79		68		40-140	15		30
CL1-BZ#3	78		68		40-140	14		30
Cl2-BZ#4/#10	80		70		40-140	13		30
Cl2-BZ#9	79		71		40-140	11		30
Cl2-BZ#7	81		72		40-140	12		30
Cl2-BZ#6	80		72		40-140	11		30
Cl2-BZ#5	81		74		40-140	9		30
Cl2-BZ#8	81		73		40-140	10		30
Cl3-BZ#19	81		73		40-140	10		30
Cl2-BZ#14	82		75		40-140	9		30
Cl3-BZ#30	80		74		40-140	8		30
Cl3-BZ#18	80		74		40-140	8		30
Cl2-BZ#11	82		75		40-140	9		30
Cl3-BZ#17	83		77		40-140	8		30
Cl2-BZ#12	81		75		40-140	8		30
Cl3-BZ#27	83		78		40-140	6		30
Cl2-BZ#13	82		75		40-140	9		30
Cl3-BZ#24	85		79		40-140	7		30
Cl3-BZ#16	82		77		40-140	6		30
Cl3-BZ#32	84		78		40-140	7		30
Cl2-BZ#15	78		73		40-140	7		30
Cl3-BZ#34	82		78		40-140	5		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab Associated sample(s): 01-02,05-11 Batch: WG1133237-2 WG1133237-3								
Cl3-BZ#23	82		77		40-140	6		30
Cl4-BZ#54	82		77		40-140	6		30
Cl3-BZ#29	83		79		40-140	5		30
Cl4-BZ#50	82		78		40-140	5		30
Cl3-BZ#26	85		81		40-140	5		30
Cl3-BZ#25	84		80		40-140	5		30
Cl4-BZ#53	86		82		40-140	5		30
Cl3-BZ#-31	86		82		40-140	5		30
Cl3-BZ#28	82		79		40-140	4		30
Cl3-BZ#33	82		80		40-140	2		30
Cl4-BZ#51	86		83		40-140	4		30
Cl3-BZ#21/#20	90		86		40-140	5		30
Cl4-BZ#45	85		82		40-140	4		30
Cl3-BZ#22	84		82		40-140	2		30
Cl4-BZ#73/#46	85		83		40-140	2		30
Cl4-BZ#69	86		83		40-140	4		30
Cl4-BZ#43	85		82		40-140	4		30
Cl3-BZ#36	85		82		40-140	4		30
Cl4-BZ#52	85		83		40-140	2		30
Cl4-BZ#48	85		83		40-140	2		30
Cl4-BZ#49	86		83		40-140	4		30
Cl5-BZ#104	84		83		40-140	1		30
Cl4-BZ#47	100		97		40-140	3		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab Associated sample(s): 01-02,05-11 Batch: WG1133237-2 WG1133237-3								
Cl4-BZ#65/#75/#62	82		80		40-140	2		30
Cl3-BZ#39	87		84		40-140	4		30
Cl3-BZ#38	85		84		40-140	1		30
Cl4-BZ#44	84		82		40-140	2		30
Cl4-BZ#59	87		80		40-140	8		30
Cl4-BZ#42	81		86		40-140	6		30
Cl4-BZ#71	84		82		40-140	2		30
Cl3-BZ#35	84		83		40-140	1		30
Cl4-BZ#41	87		85		40-140	2		30
Cl4-BZ#72	85		84		40-140	1		30
Cl5-BZ#96	88		87		40-140	1		30
Cl5-BZ#103	87		86		40-140	1		30
Cl4-BZ#68/#64	87		86		40-140	1		30
Cl4-BZ#40	87		86		40-140	1		30
Cl3-BZ#37	86		85		40-140	1		30
Cl5-BZ#100	86		86		40-140	0		30
Cl5-BZ#94	86		86		40-140	0		30
Cl4-BZ#57	85		85		40-140	0		30
Cl4-BZ#67/#58	87		87		40-140	0		30
Cl5-BZ#102	88		88		40-140	0		30
Cl4-BZ#61	86		86		40-140	0		30
Cl5-BZ#98	89		89		40-140	0		30
Cl4-BZ#76	90		89		40-140	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab Associated sample(s): 01-02,05-11 Batch: WG1133237-2 WG1133237-3								
Cl5-BZ#93	91		91		40-140	0		30
Cl4-BZ#63	86		86		40-140	0		30
Cl5-BZ#121/#95/#88	89		90		40-140	1		30
Cl4-BZ#74	87		86		40-140	1		30
Cl6-BZ#155	85		85		40-140	0		30
Cl4-BZ#70	87		87		40-140	0		30
Cl5-BZ#91	85		85		40-140	0		30
Cl4-BZ#66	87		87		40-140	0		30
Cl4-BZ#80	86		86		40-140	0		30
Cl4-BZ#55	86		86		40-140	0		30
Cl5-BZ#92	88		90		40-140	2		30
Cl5-BZ#89/#84	88		89		40-140	1		30
Cl5-BZ#101/#90	93		93		40-140	0		30
Cl4-BZ#56	89		89		40-140	0		30
Cl5-BZ#113	88		90		40-140	2		30
Cl5-BZ#99	88		88		40-140	0		30
Cl6-BZ#150	88		88		40-140	0		30
Cl4-BZ#60	90		90		40-140	0		30
Cl6-BZ#152	86		87		40-140	1		30
Cl5-BZ#119	92		93		40-140	1		30
Cl5-BZ#83/#125/#112	90		92		40-140	2		30
Cl5-BZ#86/#109	89		90		40-140	1		30
Cl6-BZ#145	87		88		40-140	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab Associated sample(s): 01-02,05-11 Batch: WG1133237-2 WG1133237-3								
Cl5-BZ#97	86		88		40-140	2		30
Cl6-BZ#148	88		89		40-140	1		30
Cl4-BZ#79	87		87		40-140	0		30
Cl5-BZ#116	85		86		40-140	1		30
Cl6-BZ#154	88		89		40-140	1		30
Cl4-BZ#78	88		89		40-140	1		30
Cl5-BZ#87/#111	90		91		40-140	1		30
Cl6-BZ#136	88		89		40-140	1		30
Cl5-BZ#117	87		88		40-140	1		30
Cl5-BZ#115	89		90		40-140	1		30
Cl5-BZ#85	88		89		40-140	1		30
Cl5-BZ#120	87		88		40-140	1		30
Cl5-BZ#110	87		89		40-140	2		30
Cl4-BZ#81	85		86		40-140	1		30
Cl6-BZ#151	94		94		40-140	0		30
Cl6-BZ#135	97		95		40-140	2		30
Cl5-BZ#82	93		95		40-140	2		30
Cl6-BZ#144	94		94		40-140	0		30
Cl6-BZ#147/#149	96		96		40-140	0		30
Cl4-BZ#77	83		83		40-140	0		30
Cl6-BZ#143/#139	95		95		40-140	0		30
Cl5-BZ#124	97		98		40-140	1		30
Cl6-BZ#140	94		94		40-140	0		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab Associated sample(s): 01-02,05-11 Batch: WG1133237-2 WG1133237-3								
Cl5-BZ#108	100		102		40-140	2		30
Cl5-BZ#107/#123	95		97		40-140	2		30
Cl7-BZ#188	94		95		40-140	1		30
Cl6-BZ#134	102		102		40-140	0		30
Cl5-BZ#106	100		95		40-140	5		30
Cl6-BZ#133	96		96		40-140	0		30
Cl6-BZ#142	89		89		40-140	0		30
Cl5-BZ#118	95		95		40-140	0		30
Cl6-BZ#131	99		100		40-140	1		30
Cl7-BZ#184	94		94		40-140	0		30
Cl6-BZ#165	97		97		40-140	0		30
Cl6-BZ#146	94		94		40-140	0		30
Cl6-BZ#161	95		95		40-140	0		30
Cl5-BZ#122	94		95		40-140	1		30
Cl6-BZ#168	82		82		40-140	0		30
Cl5-BZ#114	95		96		40-140	1		30
Cl6-BZ#153	110		112		40-140	2		30
Cl6-BZ#132	95		96		40-140	1		30
Cl7-BZ#179	92		93		40-140	1		30
Cl6-BZ#141	92		93		40-140	1		30
Cl7-BZ#176	90		91		40-140	1		30
Cl5-BZ#105	94		92		40-140	2		30
Cl6-BZ#137	93		93		40-140	0		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab Associated sample(s): 01-02,05-11 Batch: WG1133237-2 WG1133237-3								
Cl5-BZ#127	94		94		40-140	0		30
Cl7-BZ#186	92		92		40-140	0		30
Cl6-BZ#130/#164	95		95		40-140	0		30
Cl7-BZ#178	92		93		40-140	1		30
Cl6-BZ#138	92		94		40-140	2		30
Cl6-BZ#163/#160	94		95		40-140	1		30
Cl6-BZ#129/#158	94		95		40-140	1		30
Cl7-BZ#182/#175	94		94		40-140	0		30
Cl7-BZ#187	90		90		40-140	0		30
Cl7-BZ#183	88		89		40-140	1		30
Cl6-BZ#166	90		91		40-140	1		30
Cl6-BZ#159	90		90		40-140	0		30
Cl5-BZ#126	88		91		40-140	3		30
Cl7-BZ#185	91		91		40-140	0		30
Cl6-BZ#162	91		93		40-140	2		30
Cl7-BZ#174	89		90		40-140	1		30
Cl6-BZ#128	91		92		40-140	1		30
Cl8-BZ#202	94		93		40-140	1		30
Cl6-BZ#167	94		94		40-140	0		30
Cl7-BZ#181	93		94		40-140	1		30
Cl7-BZ#177	90		89		40-140	1		30
Cl8-BZ#204/#200-CAL	91		92		40-140	1		30
Cl7-BZ#171	91		92		40-140	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab Associated sample(s): 01-02,05-11 Batch: WG1133237-2 WG1133237-3								
Cl7-BZ#173	90		90		40-140	0		30
Cl8-BZ#197	90		91		40-140	1		30
Cl7-BZ#172	87		87		40-140	0		30
Cl7-BZ#192	88		88		40-140	0		30
Cl6-BZ#156	90		91		40-140	1		30
Cl6-BZ#157	84		85		40-140	1		30
Cl7-BZ#180	81		81		40-140	0		30
Cl7-BZ#193	94		93		40-140	1		30
Cl8-BZ#199	88		88		40-140	0		30
Cl7-BZ#191	84		85		40-140	1		30
Cl8-BZ#198	80		81		40-140	1		30
Cl8-BZ#201	90		88		40-140	2		30
Cl7-BZ#170	82		82		40-140	0		30
Cl7-BZ#190	87		86		40-140	1		30
Cl8-BZ#196	94		83		40-140	12		30
Cl8-BZ#203	81		91		40-140	12		30
Cl6-BZ#169	79		78		40-140	1		30
Cl9-BZ#208	85		85		40-140	0		30
Cl9-BZ#207	81		81		40-140	0		30
Cl7-BZ#189	78		79		40-140	1		30
Cl8-BZ#195	78		79		40-140	1		30
Cl8-BZ#194	78		78		40-140	0		30
Cl8-BZ#205	77		77		40-140	0		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab Associated sample(s): 01-02,05-11 Batch: WG1133237-2 WG1133237-3								
Cl9-BZ#206	74		73		40-140	1		30
Cl10-BZ#209	72		72		40-140	0		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Cl3-BZ#19-C13	83		75		50-125
Cl8-BZ#202-C13	93		93		50-125

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab Associated sample(s): 02,08,10 Batch: WG1135723-2 WG1135723-3								
Cl1-BZ#1	74		74		40-140	0		30
Cl1-BZ#2	76		75		40-140	1		30
Cl1-BZ#3	75		75		40-140	0		30
Cl2-BZ#4/#10	78		78		40-140	0		30
Cl2-BZ#9	77		78		40-140	1		30
Cl2-BZ#7	78		79		40-140	1		30
Cl2-BZ#6	78		78		40-140	0		30
Cl2-BZ#5	79		79		40-140	0		30
Cl2-BZ#8	78		79		40-140	1		30
Cl3-BZ#19	79		79		40-140	0		30
Cl2-BZ#14	80		80		40-140	0		30
Cl3-BZ#30	78		79		40-140	1		30
Cl3-BZ#18	78		79		40-140	1		30
Cl2-BZ#11	79		80		40-140	1		30
Cl3-BZ#17	81		82		40-140	1		30
Cl2-BZ#12	78		79		40-140	1		30
Cl3-BZ#27	82		83		40-140	1		30
Cl2-BZ#13	80		80		40-140	0		30
Cl3-BZ#24	84		84		40-140	0		30
Cl3-BZ#16	80		81		40-140	1		30
Cl3-BZ#32	82		83		40-140	1		30
Cl2-BZ#15	76		77		40-140	1		30
Cl3-BZ#34	80		81		40-140	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab Associated sample(s): 02,08,10 Batch: WG1135723-2 WG1135723-3								
Cl3-BZ#23	80		81		40-140	1		30
Cl4-BZ#54	81		82		40-140	1		30
Cl3-BZ#29	81		82		40-140	1		30
Cl4-BZ#50	80		82		40-140	2		30
Cl3-BZ#26	84		84		40-140	0		30
Cl3-BZ#25	82		83		40-140	1		30
Cl4-BZ#53	85		85		40-140	0		30
Cl3-BZ#-31	85		85		40-140	0		30
Cl3-BZ#28	82		83		40-140	1		30
Cl3-BZ#33	84		85		40-140	1		30
Cl4-BZ#51	86		86		40-140	0		30
Cl3-BZ#21/#20	88		88		40-140	0		30
Cl4-BZ#45	84		84		40-140	0		30
Cl3-BZ#22	84		84		40-140	0		30
Cl4-BZ#73/#46	85		86		40-140	1		30
Cl4-BZ#69	84		84		40-140	0		30
Cl4-BZ#43	88		88		40-140	0		30
Cl3-BZ#36	85		84		40-140	1		30
Cl4-BZ#52	85		86		40-140	1		30
Cl4-BZ#48	85		85		40-140	0		30
Cl4-BZ#49	85		86		40-140	1		30
Cl5-BZ#104	82		83		40-140	1		30
Cl4-BZ#47	85		85		40-140	0		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab Associated sample(s): 02,08,10 Batch: WG1135723-2 WG1135723-3								
Cl4-BZ#65/#75/#62	86		87		40-140	1		30
Cl3-BZ#39	86		86		40-140	0		30
Cl3-BZ#38	85		86		40-140	1		30
Cl4-BZ#44	83		84		40-140	1		30
Cl4-BZ#59	82		83		40-140	1		30
Cl4-BZ#42	88		89		40-140	1		30
Cl4-BZ#71	84		84		40-140	0		30
Cl3-BZ#35	84		84		40-140	0		30
Cl4-BZ#41	87		88		40-140	1		30
Cl4-BZ#72	85		85		40-140	0		30
Cl5-BZ#96	86		87		40-140	1		30
Cl5-BZ#103	85		85		40-140	0		30
Cl4-BZ#68/#64	87		87		40-140	0		30
Cl4-BZ#40	87		88		40-140	1		30
Cl3-BZ#37	85		85		40-140	0		30
Cl5-BZ#100	83		85		40-140	2		30
Cl5-BZ#94	84		84		40-140	0		30
Cl4-BZ#57	86		86		40-140	0		30
Cl4-BZ#67/#58	87		88		40-140	1		30
Cl5-BZ#102	86		87		40-140	1		30
Cl4-BZ#61	87		87		40-140	0		30
Cl5-BZ#98	86		88		40-140	2		30
Cl4-BZ#76	82		83		40-140	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab Associated sample(s): 02,08,10 Batch: WG1135723-2 WG1135723-3								
Cl5-BZ#93	88		89		40-140	1		30
Cl4-BZ#63	86		88		40-140	2		30
Cl5-BZ#121/#95/#88	87		89		40-140	2		30
Cl4-BZ#74	87		88		40-140	1		30
Cl6-BZ#155	85		86		40-140	1		30
Cl4-BZ#70	86		87		40-140	1		30
Cl5-BZ#91	83		85		40-140	2		30
Cl4-BZ#66	87		88		40-140	1		30
Cl4-BZ#80	86		86		40-140	0		30
Cl4-BZ#55	86		86		40-140	0		30
Cl5-BZ#92	86		88		40-140	2		30
Cl5-BZ#89/#84	87		88		40-140	1		30
Cl5-BZ#101/#90	90		92		40-140	2		30
Cl4-BZ#56	89		89		40-140	0		30
Cl5-BZ#113	86		87		40-140	1		30
Cl5-BZ#99	85		86		40-140	1		30
Cl6-BZ#150	87		88		40-140	1		30
Cl4-BZ#60	90		91		40-140	1		30
Cl6-BZ#152	85		87		40-140	2		30
Cl5-BZ#119	83		85		40-140	2		30
Cl5-BZ#83/#125/#112	88		90		40-140	2		30
Cl5-BZ#86/#109	90		91		40-140	1		30
Cl6-BZ#145	87		88		40-140	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab Associated sample(s): 02,08,10 Batch: WG1135723-2 WG1135723-3								
Cl5-BZ#97	84		85		40-140	1		30
Cl6-BZ#148	88		88		40-140	0		30
Cl4-BZ#79	86		88		40-140	2		30
Cl5-BZ#116	83		84		40-140	1		30
Cl6-BZ#154	86		88		40-140	2		30
Cl4-BZ#78	89		90		40-140	1		30
Cl5-BZ#87/#111	88		89		40-140	1		30
Cl6-BZ#136	88		90		40-140	2		30
Cl5-BZ#117	84		86		40-140	2		30
Cl5-BZ#115	97		99		40-140	2		30
Cl5-BZ#85	81		83		40-140	2		30
Cl5-BZ#120	87		88		40-140	1		30
Cl5-BZ#110	85		87		40-140	2		30
Cl4-BZ#81	85		86		40-140	1		30
Cl6-BZ#151	92		94		40-140	2		30
Cl6-BZ#135	94		98		40-140	4		30
Cl5-BZ#82	91		95		40-140	4		30
Cl6-BZ#144	92		95		40-140	3		30
Cl6-BZ#147/#149	96		98		40-140	2		30
Cl4-BZ#77	84		86		40-140	2		30
Cl6-BZ#143/#139	94		97		40-140	3		30
Cl5-BZ#124	94		97		40-140	3		30
Cl6-BZ#140	92		95		40-140	3		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab Associated sample(s): 02,08,10 Batch: WG1135723-2 WG1135723-3								
Cl5-BZ#108	101		103		40-140	2		30
Cl5-BZ#107/#123	83		86		40-140	4		30
Cl7-BZ#188	93		96		40-140	3		30
Cl6-BZ#134	90		93		40-140	3		30
Cl5-BZ#106	93		94		40-140	1		30
Cl6-BZ#133	106		109		40-140	3		30
Cl6-BZ#142	86		91		40-140	6		30
Cl5-BZ#118	90		94		40-140	4		30
Cl6-BZ#131	98		102		40-140	4		30
Cl7-BZ#184	93		95		40-140	2		30
Cl6-BZ#165	96		99		40-140	3		30
Cl6-BZ#146	92		95		40-140	3		30
Cl6-BZ#161	93		96		40-140	3		30
Cl5-BZ#122	91		94		40-140	3		30
Cl6-BZ#168	84		86		40-140	2		30
Cl5-BZ#114	92		95		40-140	3		30
Cl6-BZ#153	104		111		40-140	7		30
Cl6-BZ#132	95		98		40-140	3		30
Cl7-BZ#179	91		94		40-140	3		30
Cl6-BZ#141	90		94		40-140	4		30
Cl7-BZ#176	90		93		40-140	3		30
Cl5-BZ#105	88		90		40-140	2		30
Cl6-BZ#137	92		95		40-140	3		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab Associated sample(s): 02,08,10 Batch: WG1135723-2 WG1135723-3								
Cl5-BZ#127	90		93		40-140	3		30
Cl7-BZ#186	92		94		40-140	2		30
Cl6-BZ#130/#164	94		98		40-140	4		30
Cl7-BZ#178	92		94		40-140	2		30
Cl6-BZ#138	93		95		40-140	2		30
Cl6-BZ#163/#160	94		98		40-140	4		30
Cl6-BZ#129/#158	92		96		40-140	4		30
Cl7-BZ#182/#175	95		97		40-140	2		30
Cl7-BZ#187	89		93		40-140	4		30
Cl7-BZ#183	88		92		40-140	4		30
Cl6-BZ#166	88		92		40-140	4		30
Cl6-BZ#159	89		91		40-140	2		30
Cl5-BZ#126	85		88		40-140	3		30
Cl7-BZ#185	90		94		40-140	4		30
Cl6-BZ#162	91		95		40-140	4		30
Cl7-BZ#174	90		93		40-140	3		30
Cl6-BZ#128	92		95		40-140	3		30
Cl8-BZ#202	93		96		40-140	3		30
Cl6-BZ#167	93		96		40-140	3		30
Cl7-BZ#181	94		97		40-140	3		30
Cl7-BZ#177	89		92		40-140	3		30
Cl8-BZ#204/#200-CAL	92		95		40-140	3		30
Cl7-BZ#171	93		96		40-140	3		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab Associated sample(s): 02,08,10 Batch: WG1135723-2 WG1135723-3								
Cl7-BZ#173	89		93		40-140	4		30
Cl8-BZ#197	91		95		40-140	4		30
Cl7-BZ#172	88		91		40-140	3		30
Cl7-BZ#192	88		91		40-140	3		30
Cl6-BZ#156	89		93		40-140	4		30
Cl6-BZ#157	84		87		40-140	4		30
Cl7-BZ#180	83		86		40-140	4		30
Cl7-BZ#193	93		96		40-140	3		30
Cl8-BZ#199	89		92		40-140	3		30
Cl7-BZ#191	86		88		40-140	2		30
Cl8-BZ#198	84		87		40-140	4		30
Cl8-BZ#201	89		91		40-140	2		30
Cl7-BZ#170	83		86		40-140	4		30
Cl7-BZ#190	87		90		40-140	3		30
Cl8-BZ#196	87		89		40-140	2		30
Cl8-BZ#203	90		94		40-140	4		30
Cl6-BZ#169	78		80		40-140	3		30
Cl9-BZ#208	86		89		40-140	3		30
Cl9-BZ#207	82		85		40-140	4		30
Cl7-BZ#189	78		81		40-140	4		30
Cl8-BZ#195	80		83		40-140	4		30
Cl8-BZ#194	79		82		40-140	4		30
Cl8-BZ#205	78		81		40-140	4		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab Associated sample(s): 02,08,10 Batch: WG1135723-2 WG1135723-3								
CI9-BZ#206	76		78		40-140	3		30
CI10-BZ#209	74		76		40-140	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
CI3-BZ#19-C13	79		80		50-125
CI8-BZ#202-C13	90		92		50-125

Matrix Spike Analysis
Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab ID: FSL-11			Associated sample(s): 01-02,05-11			QC Batch ID: WG1133237-4	WG1133237-5	QC Sample: L1824997-05	Client			
CI1-BZ#1	ND	103	58.6	57		69.1	67		40-140	16		30
CI1-BZ#2	ND	103	63.3	61		74.1	72		40-140	16		30
CL1-BZ#3	ND	103	63.8	62		74.4	72		40-140	15		30
CI2-BZ#4/#10	ND	206	124	60		145	70		40-140	16		30
CI2-BZ#9	ND	103	66.6	65		77.0	75		40-140	14		30
CI2-BZ#7	ND	103	67.5	66		77.9	76		40-140	14		30
CI2-BZ#6	ND	103	68.3	66		78.9	76		40-140	14		30
CI2-BZ#5	ND	103	67.9	66		78.7	76		40-140	15		30
CI2-BZ#8	ND	103	66.5	64		76.9	75		40-140	15		30
CI3-BZ#19	ND	103	64.1	62		74.2	72		40-140	15		30
CI2-BZ#14	ND	103	67.9	66		78.9	76		40-140	15		30
CI3-BZ#30	ND	103	66.2	64		76.0	74		40-140	14		30
CI3-BZ#18	ND	103	66.9	65		78.0	76		40-140	15		30
CI2-BZ#11	ND	103	69.7	68		81.0	79		40-140	15		30
CI3-BZ#17	ND	103	67.3	65		78.3	76		40-140	15		30
CI2-BZ#12	ND	103	69.3	67		80.5	78		40-140	15		30
CI3-BZ#27	ND	103	67.8	66		79.0	77		40-140	15		30
CI2-BZ#13	ND	103	69.0	67		79.9	78		40-140	15		30
CI3-BZ#24	ND	103	68.8	67		80.0	78		40-140	15		30
CI3-BZ#16	ND	103	68.4	66		78.8	76		40-140	14		30
CI3-BZ#32	ND	103	69.3	67		80.9	78		40-140	15		30
CI2-BZ#15	ND	103	65.3	63		75.4	73		40-140	14		30
CI3-BZ#34	ND	103	68.3	66		79.4	77		40-140	15		30

Matrix Spike Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab ID: FSL-11			Associated sample(s): 01-02,05-11			QC Batch ID: WG1133237-4	WG1133237-5	QC Sample: L1824997-05	Client			
Cl3-BZ#23	ND	103	68.4	66		79.1	77	40-140	15		30	
Cl4-BZ#54	ND	103	64.7	63		75.2	73	40-140	15		30	
Cl3-BZ#29	ND	103	70.4	68		81.5	79	40-140	15		30	
Cl4-BZ#50	ND	103	68.3	66		78.6	76	40-140	14		30	
Cl3-BZ#26	ND	103	72.0	70		82.8	80	40-140	14		30	
Cl3-BZ#25	ND	103	71.7	70		82.8	80	40-140	14		30	
Cl4-BZ#53	ND	103	71.3	69		82.4	80	40-140	14		30	
Cl3-BZ#31	ND	103	72.2	70		83.8	81	40-140	15		30	
Cl3-BZ#28	ND	103	70.6	68		81.8	79	40-140	15		30	
Cl3-BZ#33	ND	103	70.8	69		81.7	79	40-140	14		30	
Cl4-BZ#51	ND	103	68.8	67		80.0	78	40-140	15		30	
Cl3-BZ#21/#20	ND	206	147	71		170	82	40-140	15		30	
Cl4-BZ#45	ND	103	70.3	68		81.6	79	40-140	15		30	
Cl3-BZ#22	ND	103	72.7	70		83.6	81	40-140	14		30	
Cl4-BZ#73/#46	ND	206	140	68		161	78	40-140	14		30	
Cl4-BZ#69	ND	103	71.6	70		82.1	80	40-140	14		30	
Cl4-BZ#43	ND	103	71.9	70		84.1	82	40-140	16		30	
Cl3-BZ#36	ND	103	71.9	70		82.4	80	40-140	14		30	
Cl4-BZ#52	ND	103	69.8	68		81.1	79	40-140	15		30	
Cl4-BZ#48	ND	103	71.7	70		82.6	80	40-140	14		30	
Cl4-BZ#49	ND	103	71.1	69		82.2	80	40-140	14		30	
Cl5-BZ#104	ND	103	68.5	66		79.8	77	40-140	15		30	
Cl4-BZ#47	ND	103	70.1	68		81.8	79	40-140	15		30	

Matrix Spike Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	RPD Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab ID: FSL-11			Associated sample(s): 01-02,05-11			QC Batch ID: WG1133237-4	WG1133237-5	QC Sample: L1824997-05	Client			
CI4-BZ#65/#75/#62	ND	309	214	69		248	80	40-140	15			30
CI3-BZ#39	ND	103	72.2	70		83.8	81	40-140	15			30
CI3-BZ#38	ND	103	73.1	71		84.7	82	40-140	15			30
CI4-BZ#44	ND	103	70.5	68		81.2	79	40-140	14			30
CI4-BZ#59	ND	103	69.6	68		80.9	78	40-140	15			30
CI4-BZ#42	ND	103	73.1	71		84.1	82	40-140	14			30
CI4-BZ#71	ND	103	70.2	68		81.0	79	40-140	14			30
CI3-BZ#35	ND	103	73.3	71		84.1	82	40-140	14			30
CI4-BZ#41	ND	103	72.9	71		85.0	82	40-140	15			30
CI4-BZ#72	ND	103	70.7	69		82.5	80	40-140	15			30
CI5-BZ#96	ND	103	69.3	67		80.5	78	40-140	15			30
CI5-BZ#103	ND	103	69.7	68		81.1	79	40-140	15			30
CI4-BZ#68/#64	ND	206	144	70		167	81	40-140	15			30
CI4-BZ#40	ND	103	71.4	69		82.2	80	40-140	14			30
CI3-BZ#37	ND	103	72.1	70		83.2	81	40-140	14			30
CI5-BZ#100	ND	103	69.4	67		80.9	78	40-140	15			30
CI5-BZ#94	ND	103	68.7	67		80.5	78	40-140	16			30
CI4-BZ#57	ND	103	71.9	70		83.0	80	40-140	14			30
CI4-BZ#67/#58	ND	206	148	72		170	82	40-140	14			30
CI5-BZ#102	ND	103	68.9	67		80.8	78	40-140	16			30
CI4-BZ#61	ND	103	76.3	74		86.4	84	40-140	12			30
CI5-BZ#98	ND	103	71.1	69		84.3	82	40-140	17			30
CI4-BZ#76	ND	103	68.0	66		79.0	77	40-140	15			30

Matrix Spike Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	RPD Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab ID: FSL-11			Associated sample(s): 01-02,05-11			QC Batch ID: WG1133237-4	WG1133237-5	QC Sample: L1824997-05	Client			
CI5-BZ#93	ND	103	72.9	71		84.1	82		40-140	14		30
CI4-BZ#63	ND	103	80.0	78		92.9	90		40-140	15		30
CI5-BZ#121/#95/#88	ND	309	214	69		251	81		40-140	16		30
CI4-BZ#74	ND	103	73.3	71		85.1	82		40-140	15		30
CI6-BZ#155	ND	103	68.9	67		79.7	77		40-140	15		30
CI4-BZ#70	ND	103	72.0	70		83.4	81		40-140	15		30
CI5-BZ#91	ND	103	69.1	67		81.1	79		40-140	16		30
CI4-BZ#66	ND	103	74.5	72		86.1	84		40-140	14		30
CI4-BZ#80	ND	103	73.9	72		85.7	83		40-140	15		30
CI4-BZ#55	ND	103	73.8	72		85.0	82		40-140	14		30
CI5-BZ#92	ND	103	70.7	69		84.0	82		40-140	17		30
CI5-BZ#89/#84	ND	206	144	70		168	82		40-140	15		30
CI5-BZ#101/#90	ND	206	145	70		171	83		40-140	16		30
CI4-BZ#56	ND	103	72.7	70		84.2	82		40-140	15		30
CI5-BZ#113	ND	103	71.1	69		82.3	80		40-140	15		30
CI5-BZ#99	ND	103	73.0	71		84.5	82		40-140	15		30
CI6-BZ#150	ND	103	69.6	68		80.7	78		40-140	15		30
CI4-BZ#60	ND	103	74.3	72		86.3	84		40-140	15		30
CI6-BZ#152	ND	103	70.5	68		81.6	79		40-140	15		30
CI5-BZ#119	ND	103	76.1	74		81.9	79		40-140	7		30
CI5-BZ#83/#125/#112	ND	309	211	68		255	82		40-140	19		30
CI5-BZ#86/#109	ND	206	150	73		176	85		40-140	16		30
CI6-BZ#145	ND	103	68.5	66		80.9	78		40-140	17		30

Matrix Spike Analysis
Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	RPD Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab ID: FSL-11			Associated sample(s): 01-02,05-11			QC Batch ID: WG1133237-4	WG1133237-5	QC Sample: L1824997-05	Client			
CI5-BZ#97	ND	103	69.4	67		80.7	78	40-140	15			30
CI6-BZ#148	ND	103	71.5	69		82.0	80	40-140	14			30
CI4-BZ#79	ND	103	76.2	74		87.1	84	40-140	13			30
CI5-BZ#116	ND	103	72.8	71		84.0	82	40-140	14			30
CI6-BZ#154	ND	103	70.7	69		82.6	80	40-140	16			30
CI4-BZ#78	ND	103	74.1	72		86.0	83	40-140	15			30
CI5-BZ#87/#111	ND	206	144	70		169	82	40-140	16			30
CI6-BZ#136	ND	103	69.6	68		80.2	78	40-140	14			30
CI5-BZ#117	ND	103	63.7	62		74.6	72	40-140	16			30
CI5-BZ#115	ND	103	80.6	78		93.5	91	40-140	15			30
CI5-BZ#85	ND	103	67.7	66		79.0	77	40-140	15			30
CI5-BZ#120	ND	103	74.5	72		86.6	84	40-140	15			30
CI5-BZ#110	ND	103	72.5	70		83.3	81	40-140	14			30
CI4-BZ#81	ND	103	75.1	73		86.1	84	40-140	14			30
CI6-BZ#151	ND	103	72.9	71		83.5	81	40-140	14			30
CI6-BZ#135	ND	103	73.2	71		84.0	82	40-140	14			30
CI5-BZ#82	ND	103	72.9	71		83.8	81	40-140	14			30
CI6-BZ#144	ND	103	72.0	70		83.3	81	40-140	15			30
CI6-BZ#147/#149	ND	206	149	72		171	83	40-140	14			30
CI4-BZ#77	ND	103	73.7	72		83.6	81	40-140	13			30
CI6-BZ#143/#139	ND	206	145	70		168	82	40-140	15			30
CI5-BZ#124	ND	103	76.8	74		88.4	86	40-140	14			30
CI6-BZ#140	ND	103	70.5	68		81.1	79	40-140	14			30

Matrix Spike Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	RPD Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab ID: FSL-11			Associated sample(s): 01-02,05-11			QC Batch ID: WG1133237-4	WG1133237-5	QC Sample: L1824997-05	Client			
CI5-BZ#108	ND	103	83.6	81		95.8	93		40-140	14		30
CI5-BZ#107/#123	ND	206	144	70		168	82		40-140	15		30
CI7-BZ#188	ND	103	69.2	67		81.0	79		40-140	16		30
CI6-BZ#134	ND	103	67.9	66		80.1	78		40-140	16		30
CI5-BZ#106	ND	103	73.6	71		86.0	83		40-140	16		30
CI6-BZ#133	ND	103	79.5	77		92.6	90		40-140	15		30
CI6-BZ#142	ND	103	68.3	66		78.5	76		40-140	14		30
CI5-BZ#118	ND	103	73.8	72		85.6	83		40-140	15		30
CI6-BZ#131	ND	103	74.6	72		86.5	84		40-140	15		30
CI7-BZ#184	ND	103	71.5	69		82.1	80		40-140	14		30
CI6-BZ#165	ND	103	74.5	72		86.1	84		40-140	14		30
CI6-BZ#146	ND	103	72.5	70		83.3	81		40-140	14		30
CI6-BZ#161	ND	103	73.6	71		85.3	83		40-140	15		30
CI5-BZ#122	ND	103	73.8	72		85.7	83		40-140	15		30
CI6-BZ#168	ND	103	66.3	64		77.3	75		40-140	15		30
CI5-BZ#114	ND	103	74.0	72		85.9	83		40-140	15		30
CI6-BZ#153	ND	103	81.0	79		93.4	91		40-140	14		30
CI6-BZ#132	ND	103	75.0	73		85.8	83		40-140	13		30
CI7-BZ#179	ND	103	71.6	70		81.5	79		40-140	13		30
CI6-BZ#141	ND	103	75.9	74		85.6	83		40-140	12		30
CI7-BZ#176	ND	103	71.2	69		81.7	79		40-140	14		30
CI5-BZ#105	ND	103	73.7	72		84.6	82		40-140	14		30
CI6-BZ#137	ND	103	74.7	72		85.2	83		40-140	13		30

Matrix Spike Analysis
Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	RPD Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab ID: FSL-11			Associated sample(s): 01-02,05-11			QC Batch ID: WG1133237-4	WG1133237-5	QC Sample: L1824997-05	Client			
CI5-BZ#127	ND	103	74.7	72		86.5	84		40-140	15		30
CI7-BZ#186	ND	103	70.0	68		80.5	78		40-140	14		30
CI6-BZ#130/#164	ND	206	146	71		168	82		40-140	14		30
CI7-BZ#178	ND	103	73.4	71		83.5	81		40-140	13		30
CI6-BZ#138	ND	103	73.4	71		84.8	82		40-140	14		30
CI6-BZ#163/#160	ND	206	147	71		170	82		40-140	15		30
CI6-BZ#129/#158	ND	206	144	70		164	80		40-140	13		30
CI7-BZ#182/#175	ND	206	140	68		162	79		40-140	15		30
CI7-BZ#187	ND	103	70.8	69		81.1	79		40-140	14		30
CI7-BZ#183	ND	103	72.5	70		82.8	80		40-140	13		30
CI6-BZ#166	ND	103	75.2	73		85.6	83		40-140	13		30
CI6-BZ#159	ND	103	75.8	74		86.4	84		40-140	13		30
CI5-BZ#126	ND	103	75.8	74		87.0	84		40-140	14		30
CI7-BZ#185	ND	103	70.3	68		81.0	79		40-140	14		30
CI6-BZ#162	ND	103	72.9	71		83.9	81		40-140	14		30
CI7-BZ#174	ND	103	68.8	67		80.2	78		40-140	15		30
CI6-BZ#128	ND	103	70.9	69		82.6	80		40-140	15		30
CI8-BZ#202	ND	103	68.3	66		78.8	76		40-140	14		30
CI6-BZ#167	ND	103	72.1	70		83.1	81		40-140	14		30
CI7-BZ#181	ND	103	71.9	70		82.7	80		40-140	14		30
CI7-BZ#177	ND	103	69.7	68		80.3	78		40-140	14		30
CI8-BZ#204/#200-CAL	ND	206	139	67		160	78		40-140	14		30
CI7-BZ#171	ND	103	72.6	70		84.7	82		40-140	15		30

Matrix Spike Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Recovery Qual	Limits	RPD	RPD Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab ID: FSL-11			Associated sample(s): 01-02,05-11			QC Batch ID: WG1133237-4	WG1133237-5	QC Sample: L1824997-05	Client			
CI7-BZ#173	ND	103	71.8	70		82.8	80	40-140	14			30
CI8-BZ#197	ND	103	69.7	68		80.6	78	40-140	15			30
CI7-BZ#172	ND	103	71.6	70		82.1	80	40-140	14			30
CI7-BZ#192	ND	103	69.7	68		81.1	79	40-140	15			30
CI6-BZ#156	ND	103	73.6	71		85.2	83	40-140	15			30
CI6-BZ#157	ND	103	67.1	65		78.2	76	40-140	15			30
CI7-BZ#180	ND	103	62.2	60		73.1	71	40-140	16			30
CI7-BZ#193	ND	103	71.8	70		82.2	80	40-140	14			30
CI8-BZ#199	ND	103	68.8	67		79.5	77	40-140	14			30
CI7-BZ#191	ND	103	70.8	69		81.4	79	40-140	14			30
CI8-BZ#198	ND	103	68.0	66		79.4	77	40-140	15			30
CI8-BZ#201	ND	103	69.4	67		79.2	77	40-140	13			30
CI7-BZ#170	ND	103	67.9	66		77.1	75	40-140	13			30
CI7-BZ#190	ND	103	69.4	67		80.7	78	40-140	15			30
CI8-BZ#196	ND	103	66.8	65		78.6	76	40-140	16			30
CI8-BZ#203	ND	103	69.4	67		79.5	77	40-140	14			30
CI6-BZ#169	ND	103	71.7	70		83.5	81	40-140	15			30
CI9-BZ#208	ND	103	68.5	66		80.3	78	40-140	16			30
CI9-BZ#207	ND	103	66.5	64		77.0	75	40-140	15			30
CI7-BZ#189	ND	103	68.7	67		79.9	78	40-140	15			30
CI8-BZ#195	ND	103	64.2	62		74.8	73	40-140	15			30
CI8-BZ#194	ND	103	67.9	66		78.1	76	40-140	14			30
CI8-BZ#205	ND	103	68.4	66		78.3	76	40-140	13			30

Matrix Spike Analysis
Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
PCB Homologs by GC/MS-SIM - Mansfield Lab			Associated sample(s): 01-02,05-11			QC Batch ID: WG1133237-4	WG1133237-5	QC Sample: L1824997-05	Client			
ID: FSL-11												
CI9-BZ#206	ND	103	64.2	62		74.4	72		40-140	15		30
CI10-BZ#209	ND	103	62.0	60		72.0	70		40-140	15		30

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
CI3-BZ#19-C13	66		75		50-125
CI8-BZ#202-C13	66		75		50-125

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Serial_No:07161816:47
Lab Number: L1824997
Report Date: 07/16/18

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent
D	Absent
E	Absent
F	Absent
G	Absent
I	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1824997-01A	Vial HCl preserved	E	NA		5.5	Y	Absent		EPH(14)
L1824997-01B	Vial HCl preserved	E	NA		5.5	Y	Absent		MCP-8260-10(14)
L1824997-01C	Vial HCl preserved	E	NA		5.5	Y	Absent		MCP-8260-10(14)
L1824997-01D	Vial HCl preserved	E	NA		5.5	Y	Absent		VPH-DELUX-18(14)
L1824997-01E	Vial HCl preserved	E	NA		5.5	Y	Absent		VPH-DELUX-18(14)
L1824997-01F	Vial HCl preserved	E	NA		5.5	Y	Absent		VPH-DELUX-18(14)
L1824997-01G	Amber 1000ml unpreserved	E	7	7	5.5	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-01H	Amber 1000ml unpreserved	E	7	7	5.5	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-01I	Amber 1000ml HCl preserved	E	<2	<2	5.5	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-01J	Amber 1000ml HCl preserved	E	<2	<2	5.5	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-02D	Vial HCl preserved	F	NA		6.0	Y	Absent		VPH-DELUX-18(14)
L1824997-02E	Vial HCl preserved	F	NA		6.0	Y	Absent		VPH-DELUX-18(14)
L1824997-02F	Vial HCl preserved	F	NA		6.0	Y	Absent		VPH-DELUX-18(14)
L1824997-02G	Amber 1000ml unpreserved	F	7	7	6.0	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-02H	Amber 1000ml unpreserved	F	7	7	6.0	Y	Absent		A2-PCBHOMS-8270SIM(7)

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1824997-02I	Amber 1000ml HCl preserved	F	<2	<2	6.0	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-02J	Amber 1000ml HCl preserved	F	<2	<2	6.0	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-03A	Vial HCl preserved	E	NA		5.5	Y	Absent		MCP-8260-10(14)
L1824997-03B	Vial HCl preserved	E	NA		5.5	Y	Absent		MCP-8260-10(14)
L1824997-03C	Vial HCl preserved	E	NA		5.5	Y	Absent		MCP-8260-10(14)
L1824997-03D	Vial HCl preserved	E	NA		5.5	Y	Absent		VPH-DELUX-18(14)
L1824997-03E	Vial HCl preserved	E	NA		5.5	Y	Absent		VPH-DELUX-18(14)
L1824997-03F	Vial HCl preserved	E	NA		5.5	Y	Absent		VPH-DELUX-18(14)
L1824997-03I	Amber 1000ml HCl preserved	E	<2	<2	5.5	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-03J	Amber 1000ml HCl preserved	E	<2	<2	5.5	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-04A	Vial HCl preserved	A	NA		2.0	Y	Absent		MCP-8260-10(14)
L1824997-04B	Vial HCl preserved	A	NA		2.0	Y	Absent		MCP-8260-10(14)
L1824997-04C	Vial HCl preserved	A	NA		2.0	Y	Absent		MCP-8260-10(14)
L1824997-04D	Vial HCl preserved	A	NA		2.0	Y	Absent		VPH-DELUX-18(14)
L1824997-04E	Vial HCl preserved	A	NA		2.0	Y	Absent		VPH-DELUX-18(14)
L1824997-04F	Vial HCl preserved	A	NA		2.0	Y	Absent		VPH-DELUX-18(14)
L1824997-04I	Amber 1000ml HCl preserved	A	<2	<2	2.0	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-04J	Amber 1000ml HCl preserved	A	<2	<2	2.0	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-05A	Vial HCl preserved	E	NA		5.5	Y	Absent		MCP-8260-10(14)
L1824997-05A1	Vial HCl preserved	F	NA		6.0	Y	Absent		MCP-8260-10(14)
L1824997-05A2	Vial HCl preserved	F	NA		6.0	Y	Absent		MCP-8260-10(14)
L1824997-05B	Vial HCl preserved	E	NA		5.5	Y	Absent		MCP-8260-10(14)
L1824997-05B1	Vial HCl preserved	F	NA		6.0	Y	Absent		MCP-8260-10(14)
L1824997-05B2	Vial HCl preserved	F	NA		6.0	Y	Absent		MCP-8260-10(14)
L1824997-05C	Vial HCl preserved	E	NA		5.5	Y	Absent		MCP-8260-10(14)
L1824997-05C1	Vial HCl preserved	F	NA		6.0	Y	Absent		MCP-8260-10(14)
L1824997-05C2	Vial HCl preserved	F	NA		6.0	Y	Absent		MCP-8260-10(14)
L1824997-05D	Vial HCl preserved	E	NA		5.5	Y	Absent		VPH-DELUX-18(14)

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1824997-05D1	Vial HCl preserved	F	NA		6.0	Y	Absent		VPH-DELUX-18(14)
L1824997-05D2	Vial HCl preserved	F	NA		6.0	Y	Absent		VPH-DELUX-18(14)
L1824997-05E	Vial HCl preserved	E	NA		5.5	Y	Absent		VPH-DELUX-18(14)
L1824997-05E1	Vial HCl preserved	F	NA		6.0	Y	Absent		VPH-DELUX-18(14)
L1824997-05E2	Vial HCl preserved	F	NA		6.0	Y	Absent		VPH-DELUX-18(14)
L1824997-05F	Vial HCl preserved	E	NA		5.5	Y	Absent		VPH-DELUX-18(14)
L1824997-05F1	Vial HCl preserved	F	NA		6.0	Y	Absent		VPH-DELUX-18(14)
L1824997-05F2	Vial HCl preserved	F	NA		6.0	Y	Absent		VPH-DELUX-18(14)
L1824997-05G	Amber 1000ml unpreserved	E	7	7	5.5	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-05G1	Amber 1000ml unpreserved	F	7	7	6.0	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-05G2	Amber 1000ml unpreserved	F	7	7	6.0	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-05H	Amber 1000ml unpreserved	E	7	7	5.5	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-05H1	Amber 1000ml unpreserved	F	7	7	6.0	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-05H2	Amber 1000ml unpreserved	F	7	7	6.0	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-05I	Amber 1000ml HCl preserved	E	<2	<2	5.5	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-05I1	Amber 1000ml HCl preserved	F	<2	<2	6.0	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-05I2	Amber 1000ml HCl preserved	F	<2	<2	6.0	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-05J	Amber 1000ml HCl preserved	E	<2	<2	5.5	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-05J1	Amber 1000ml HCl preserved	F	<2	<2	6.0	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-05J2	Amber 1000ml HCl preserved	F	<2	<2	6.0	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-06A	Vial HCl preserved	D	NA		4.7	Y	Absent		MCP-8260-10(14)
L1824997-06B	Vial HCl preserved	D	NA		4.7	Y	Absent		MCP-8260-10(14)
L1824997-06C	Vial HCl preserved	D	NA		4.7	Y	Absent		MCP-8260-10(14)
L1824997-06D	Vial HCl preserved	D	NA		4.7	Y	Absent		VPH-DELUX-18(14)
L1824997-06E	Vial HCl preserved	D	NA		4.7	Y	Absent		VPH-DELUX-18(14)
L1824997-06F	Vial HCl preserved	D	NA		4.7	Y	Absent		VPH-DELUX-18(14)
L1824997-06G	Amber 1000ml unpreserved	D	7	7	4.7	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-06H	Amber 1000ml unpreserved	D	7	7	4.7	Y	Absent		A2-PCBHOMS-8270SIM(7)

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1824997-06I	Amber 1000ml HCl preserved	D	<2	<2	4.7	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-06J	Amber 1000ml HCl preserved	D	<2	<2	4.7	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-07G	Amber 1000ml unpreserved	I	7	7	2.9	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-07H	Amber 1000ml unpreserved	I	7	7	2.9	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-08A	Vial HCl preserved	B	NA		2.2	Y	Absent		MCP-8260-10(14)
L1824997-08B	Vial HCl preserved	B	NA		2.2	Y	Absent		MCP-8260-10(14)
L1824997-08C	Vial HCl preserved	B	NA		2.2	Y	Absent		MCP-8260-10(14)
L1824997-08D	Vial HCl preserved	B	NA		2.2	Y	Absent		VPH-DELUX-18(14)
L1824997-08E	Vial HCl preserved	B	NA		2.2	Y	Absent		VPH-DELUX-18(14)
L1824997-08F	Vial HCl preserved	B	NA		2.2	Y	Absent		VPH-DELUX-18(14)
L1824997-08G	Amber 1000ml unpreserved	B	7	7	2.2	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-08H	Amber 1000ml unpreserved	B	7	7	2.2	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-08I	Amber 1000ml HCl preserved	B	<2	<2	2.2	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-08J	Amber 1000ml HCl preserved	B	<2	<2	2.2	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-09A	Vial HCl preserved	I	NA		2.9	Y	Absent		MCP-8260-10(14)
L1824997-09B	Vial HCl preserved	I	NA		2.9	Y	Absent		MCP-8260-10(14)
L1824997-09C	Vial HCl preserved	I	NA		2.9	Y	Absent		MCP-8260-10(14)
L1824997-09D	Vial HCl preserved	I	NA		2.9	Y	Absent		VPH-DELUX-18(14)
L1824997-09E	Vial HCl preserved	I	NA		2.9	Y	Absent		VPH-DELUX-18(14)
L1824997-09F	Vial HCl preserved	I	NA		2.9	Y	Absent		VPH-DELUX-18(14)
L1824997-09G	Amber 1000ml unpreserved	I	7	7	2.9	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-09H	Amber 1000ml unpreserved	I	7	7	2.9	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-09I	Amber 1000ml HCl preserved	I	<2	<2	2.9	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-09J	Amber 1000ml HCl preserved	I	<2	<2	2.9	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-10D	Vial HCl preserved	B	NA		2.2	Y	Absent		VPH-DELUX-18(14)
L1824997-10E	Vial HCl preserved	B	NA		2.2	Y	Absent		VPH-DELUX-18(14)
L1824997-10F	Vial HCl preserved	B	NA		2.2	Y	Absent		VPH-DELUX-18(14)
L1824997-10G	Amber 1000ml unpreserved	B	7	7	2.2	Y	Absent		A2-PCBHOMS-8270SIM(7)

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1824997-10H	Amber 1000ml unpreserved	B	7	7	2.2	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-10I	Amber 1000ml HCl preserved	B	<2	<2	2.2	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-10J	Amber 1000ml HCl preserved	B	<2	<2	2.2	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-11D	Vial HCl preserved	G	NA		2.2	Y	Absent		VPH-DELUX-18(14)
L1824997-11E	Vial HCl preserved	G	NA		2.2	Y	Absent		VPH-DELUX-18(14)
L1824997-11F	Vial HCl preserved	G	NA		2.2	Y	Absent		VPH-DELUX-18(14)
L1824997-11G	Amber 1000ml unpreserved	G	7	7	2.2	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-11H	Amber 1000ml unpreserved	G	7	7	2.2	Y	Absent		A2-PCBHOMS-8270SIM(7)
L1824997-11I	Amber 1000ml HCl preserved	G	<2	<2	2.2	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-11J	Amber 1000ml HCl preserved	G	<2	<2	2.2	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-12D	Vial HCl preserved	C	NA		5.9	Y	Absent		VPH-DELUX-18(14)
L1824997-12E	Vial HCl preserved	C	NA		5.9	Y	Absent		VPH-DELUX-18(14)
L1824997-12F	Vial HCl preserved	C	NA		5.9	Y	Absent		VPH-DELUX-18(14)
L1824997-12I	Amber 1000ml HCl preserved	C	<2	<2	5.9	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-12J	Amber 1000ml HCl preserved	C	<2	<2	5.9	Y	Absent		EPH-MS-10(14),EPHD-GC-10(14)
L1824997-15A	Vial HCl preserved	A	NA		2.0	Y	Absent		HOLD(14)
L1824997-15B	Vial HCl preserved	A	NA		2.0	Y	Absent		HOLD(14)
L1824997-15C	Vial HCl preserved	A	NA		2.0	Y	Absent		HOLD(14)
L1824997-15D	Vial HCl preserved	A	NA		2.0	Y	Absent		HOLD(14)
L1824997-16A	Vial HCl preserved	D	NA		4.7	Y	Absent		HOLD(14)
L1824997-16B	Vial HCl preserved	D	NA		4.7	Y	Absent		HOLD(14)
L1824997-16C	Vial HCl preserved	D	NA		4.7	Y	Absent		HOLD(14)
L1824997-16D	Vial HCl preserved	D	NA		4.7	Y	Absent		HOLD(14)
L1824997-16E	Vial HCl preserved	D	NA		4.7	Y	Absent		HOLD(14)
L1824997-16F	Vial HCl preserved	D	NA		4.7	Y	Absent		HOLD(14)
L1824997-16G	Amber 1000ml HCl preserved	D	<2	<2	4.7	Y	Absent		HOLD-8270(7)
L1824997-16H	Amber 1000ml HCl preserved	D	<2	<2	4.7	Y	Absent		HOLD-8270(7)
L1824997-16I	Amber 1000ml unpreserved	D	7	7	4.7	Y	Absent		HOLD-8082()

*Values in parentheses indicate holding time in days

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Serial_No:07161816:47
Lab Number: L1824997
Report Date: 07/16/18

Container Information

Container ID	Container Type	<i>Initial</i> Cooler	<i>Final</i> pH	<i>Temp</i> deg C	Pres	Seal	<i>Frozen</i> Date/Time	Analysis(*)
L1824997-16J	Amber 1000ml unpreserved	D	7	7	4.7	Y	Absent	HOLD-8082()

*Values in parentheses indicate holding time in days

Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

- Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.
- Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.
- Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.
- Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.
- Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A - Spectra identified as "Aldol Condensation Product".
- B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Report Format: Data Usability Report



Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedances are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report



Project Name: CUMMINGS BEVERLY
Project Number: Not Specified

Lab Number: L1824997
Report Date: 07/16/18

REFERENCES

- 97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.
- 98 Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MassDEP, May 2004, Revision 1.1 with QC Requirements & Performance Standards for the Analysis of EPH under the Massachusetts Contingency Plan, WSC-CAM-IVB, July 2010.
- 105 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997 in conjunction with NOAA Technical Memorandum NMFS-NWFSC-59: Extraction, Cleanup and GC/MS Analysis of Sediments and Tissues for Organic Contaminants, March 2004 and the Determination of Pesticides and PCBs in Water and Oil/Sediment by GC/MS: Method 680, EPA 01A0005295, November 1985.
- 131 Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), MassDEP, February 2018, Revision 2.1 with QC Requirements & Performance Standards for the Analysis of VPH under the Massachusetts Contingency Plan, WSC-CAM-IVA, June 1, 2018.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

EPA 300: DW: Bromide

EPA 6860: SCM: Perchlorate

EPA 9010: NPW and SCM: Amenable Cyanide Distillation

SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; EPA 353.2: Nitrate-N, Nitrite-N; SM4500NO₃-F: Nitrate-N, Nitrite-N; SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B

EPA 332: Perchlorate; EPA 524.2: THMs and VOCs; EPA 504.1: EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, EPA 350.1: Ammonia-N, LACHAT 10-107-06-1-B: Ammonia-N, EPA 351.1, SM4500NO₃-F, EPA 353.2: Nitrate-N, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO₄-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.

EPA 624: Volatile Halocarbons & Aromatics,

EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625: SVOC (Acid/Base/Neutral Extractables), EPA 600/4-81-045: PCB-Oil.

Microbiology: SM9223B-Colilert-QT, Enterolert-QT, SM9221E, SM9222D.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. EPA 200.8: Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. EPA 245.1 Hg. EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



CHAIN OF CUSTODY

PAGE 1 OF 2

WESTBORO, MA
TEL: 508-898-9220
FAX: 508-898-9193

MANSFIELD, MA
TEL: 508-822-9300
FAX: 508-822-3288

Client Information

Client: FSL Associates
Address: 358 Chestnut Hill Ave.
Boston, MA
Phone: 617-232-0001
Fax:

Email: Bhoskins@FSLassociates.com

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Standard RUSH (only confirmed if pre-appointed)

Date Due: Time:

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS										SAMPLE HANDLING	TOTAL BOTTLES
		Date	Time			VPH	EPH	VOC's	PCB	Homologs							
24997-01	FSL-4	6/29/18	0920	6W		X	X	X									
02	FSL-5		1020			X	X	X									
03	FSL-6		1120			X	X	X									
04	FSL-7		1245			X	X	X									
05	FSL-11		1345			X	X	X									
06	Duplicate		0920			X	X	X									
05	MS		1345			X	X	X									
07	MSD		1345			X	X	X									
07	FSL-1		0930						X								
08	FSL-12		1145	✓		X	X	X									

Container Type	V	A	V	A
----------------	---	---	---	---

Preservative	B	B	B	A
--------------	---	---	---	---

Relinquished By:

Date/Time

Received By:

Date/Time

John J. S.
Schenck AAL 06/29/18 10:10 AM
John S. Schenck 06/29/18 10:10 AM
John S. Schenck 06/29/18 10:10 AM

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.



CHAIN OF CUSTODY

PAGE 2 OF 2

Date Rec'd in Lab:

6/29/18

ALPHA Job #: L1824997

WESTBORO, MA
TEL: 508-898-9220
FAX: 508-898-9193MANSFIELD, MA
TEL: 508-822-9300
FAX: 508-822-3288

Client Information

Client: FSL Associates

Address: 358 Chestnut Hill Ave.

Phone: 617-232-0001

Fax:

Email: Bhoskins@FSLassociates.com

 These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

ALPHA Lab ID
(Lab Use Only)

Sample ID

Collection

Date

Time

Sample Matrix

Sampler's Initials

24997-09

Duplicate

6/29/18 1145

GW

XX XX

10

FSL-13

1335

XX X

11

FSL-14

1025

XX X

12

FSL-15

V 1530

V

XX

Relinquished By:
John J. Jr.
Date/Time:
6/29/18 16:00
Received By:
Bruce Hoskins
Date/Time:
6/29/18 16:00

Container Type

V A

Preservative

B B

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Method Blank Summary
Form 4
VOLATILES

Client	: FSL Associates	Lab Number	: L1824997
Project Name	: CUMMINGS BEVERLY	Project Number	:
Lab Sample ID	: WG1132210-5	Lab File ID	: VJ180703A09
Instrument ID	: JACK	Analysis Date	
Matrix	: WATER		: 07/03/18 06:27

Client Sample No.	Lab Sample ID	Analysis Date
WG1132210-3LCS	WG1132210-3	07/03/18 04:16
WG1132210-4LCSD	WG1132210-4	07/03/18 05:20
FSL-4	L1824997-01	07/03/18 10:54
FSL-6	L1824997-03	07/03/18 11:28
FSL-11	L1824997-05	07/03/18 12:01
DUPLICATE	L1824997-06	07/03/18 12:35
FSL-12	L1824997-08D	07/03/18 13:08
DUPLICATE	L1824997-09D	07/03/18 13:42
FSL-11MS	WG1132210-6	07/03/18 14:49
FSL-11MSD	WG1132210-7	07/03/18 15:23

**Method Blank Summary
Form 4
VOLATILES**

Client	: FSL Associates	Lab Number	: L1824997
Project Name	: CUMMINGS BEVERLY	Project Number	:
Lab Sample ID	: WG1132225-5	Lab File ID	: VJ180703A10
Instrument ID	: JACK	Analysis Date	
Matrix	: WATER		: 07/03/18 06:44

Client Sample No.	Lab Sample ID	Analysis Date
WG1132225-3LCS	WG1132225-3	07/03/18 05:04
WG1132225-4LCSD	WG1132225-4	07/03/18 05:37
FSL-7	L1824997-04D	07/03/18 10:38

**Continuing Calibration
Form 7**

Client :	FSL Associates	Lab Number :	L1824997
Project Name :	CUMMINGS BEVERLY	Project Number :	
Instrument ID :	JACK	Calibration Date :	07/03/18 04:16
Lab File ID :	VJ180703A01	Init. Calib. Date(s) :	06/13/18 06/13/18
Sample No :	WG1132210-2	Init. Calib. Times :	19:22 23:17
Channel :			

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	88	0
Dichlorodifluoromethane	0.354	0.379	-	-7.1	20	82	0
Chloromethane	0.574	0.629	-	-9.6	20	92	-.03
Vinyl chloride	10	11.068	-	-10.7	20	88	0
Bromomethane	10	11.845	-	-18.5	20	97	0
Chloroethane	0.17	0.221	-	-30*	20	104	0
Trichlorofluoromethane	10	13.387	-	-33.9*	20	102	0
Ethyl ether	0.136	0.146	-	-7.4	20	89	0
1,1-Dichloroethene	0.265	0.321	-	-21.1*	20	95	0
Carbon disulfide	0.683	0.751	-	-10	20	78	0
Methylene chloride	0.275	0.292	-	-6.2	20	92	0
Acetone	10	6.479	-	35.2*	20	73	0
trans-1,2-Dichloroethene	0.285	0.33	-	-15.8	20	97	0
Methyl tert-butyl ether	0.797	0.786	-	1.4	20	85	0
Diisopropyl ether	1.59	1.653	-	-4	20	87	0
1,1-Dichloroethane	0.675	0.764	-	-13.2	20	92	0
Ethyl tert-butyl ether	1.144	1.152	-	-0.7	20	85	0
cis-1,2-Dichloroethene	0.368	0.411	-	-11.7	20	88	0
2,2-Dichloropropane	0.527	0.615	-	-16.7	20	94	0
Bromochloromethane	0.162	0.183	-	-13	20	93	0
Chloroform	0.575	0.651	-	-13.2	20	94	0
Carbon tetrachloride	0.462	0.546	-	-18.2	20	92	0
Tetrahydrofuran	0.13	0.112	-	13.8	20	72	0
Dibromofluoromethane	0.224	0.236	-	-5.4	20	92	0
1,1,1-Trichloroethane	0.534	0.615	-	-15.2	20	94	0
2-Butanone	10	8.354	-	16.5	20	75	0
1,1-Dichloropropene	0.501	0.54	-	-7.8	20	89	0
Benzene	1.437	1.581	-	-10	20	92	0
tert-Amyl methyl ether	0.9	0.869	-	3.4	20	83	0
1,2-Dichloroethane-d4	0.274	0.261	-	4.7	20	87	0
1,2-Dichloroethane	0.454	0.488	-	-7.5	20	91	0
Trichloroethene	0.359	0.404	-	-12.5	20	92	0
Dibromomethane	0.181	0.187	-	-3.3	20	88	0
1,2-Dichloropropane	0.397	0.422	-	-6.3	20	90	0
Bromodichloromethane	0.438	0.461	-	-5.3	20	88	0
1,4-Dioxane	0.00271	0.0023*	-	15.1	20	78	0
cis-1,3-Dichloropropene	0.572	0.59	-	-3.1	20	87	0
Chlorobenzene-d5	1	1	-	0	20	87	0
Toluene-d8	1.276	1.28	-	-0.3	20	88	0
Toluene	1.206	1.33	-	-10.3	20	92	0
4-Methyl-2-pentanone	0.14	0.117	-	16.4	20	73	0
Tetrachloroethene	0.52	0.608	-	-16.9	20	95	0
trans-1,3-Dichloropropene	0.622	0.653	-	-5	20	86	0
1,1,2-Trichloroethane	0.29	0.29	-	0	20	84	0
Chlorodibromomethane	0.408	0.425	-	-4.2	20	87	0

* Value outside of QC limits.



Continuing Calibration Form 7

Client : FSL Associates
 Project Name : CUMMINGS BEVERLY
 Instrument ID : JACK
 Lab File ID : VJ180703A01
 Sample No : WG1132210-2
 Channel :

Lab Number	: L1824997
Project Number	:
Calibration Date	: 07/03/18 04:16
Init. Calib. Date(s)	: 06/13/18 06/13/18
Init. Calib. Times	: 19:22 23:17

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
1,3-Dichloropropane	0.587	0.61	-	-3.9	20	86	0
1,2-Dibromoethane	0.343	0.361	-	-5.2	20	87	0
2-Hexanone	0.31	0.25	-	19.4	20	70	0
Chlorobenzene	1.301	1.444	-	-11	20	90	0
Ethylbenzene	2.237	2.473	-	-10.5	20	93	0
1,1,1,2-Tetrachloroethane	0.449	0.502	-	-11.8	20	93	0
p/m Xylene	1.015	1.089	-	-7.3	20	79	0
o Xylene	0.827	0.831	-	-0.5	20	82	0
Styrene	1.34	1.467	-	-9.5	20	89	0
1,4-Dichlorobenzene-d4	1	1	-	0	20	85	0
Bromoform	0.476	0.483	-	-1.5	20	85	0
Isopropylbenzene	4.649	5.166	-	-11.1	20	87	0
4-Bromofluorobenzene	0.971	0.962	-	0.9	20	85	0
Bromobenzene	1.063	1.247	-	-17.3	20	93	0
n-Propylbenzene	4.875	5.231	-	-7.3	20	89	0
1,1,2,2-Tetrachloroethane	0.774	0.799	-	-3.2	20	82	0
2-Chlorotoluene	3.186	3.503	-	-9.9	20	89	0
1,3,5-Trimethylbenzene	3.29	3.583	-	-8.9	20	89	0
1,2,3-Trichloropropane	0.654	0.663	-	-1.4	20	82	0
4-Chlorotoluene	2.984	3.164	-	-6	20	88	0
tert-Butylbenzene	3.004	3.137	-	-4.4	20	86	0
1,2,4-Trimethylbenzene	3.009	3.276	-	-8.9	20	91	0
sec-Butylbenzene	3.989	4.185	-	-4.9	20	86	0
p-Isopropyltoluene	3.362	3.607	-	-7.3	20	88	0
1,3-Dichlorobenzene	1.93	2.195	-	-13.7	20	94	0
1,4-Dichlorobenzene	1.874	2.075	-	-10.7	20	92	0
n-Butylbenzene	2.436	2.52	-	-3.4	20	88	0
1,2-Dichlorobenzene	1.752	1.977	-	-12.8	20	91	0
1,2-Dibromo-3-chloropropan	0.129	0.124	-	3.9	20	76	0
Hexachlorobutadiene	10	10.711	-	-7.1	20	90	0
1,2,4-Trichlorobenzene	10	10.642	-	-6.4	20	101	0
Naphthalene	1.591	1.79	-	-12.5	20	103	0
1,2,3-Trichlorobenzene	0.643	0.75	-	-16.6	20	102	0

* Value outside of QC limits.



**Continuing Calibration
Form 7**

Client	: FSL Associates	Lab Number	: L1824997		
Project Name	: CUMMINGS BEVERLY	Project Number	:		
Instrument ID	: JACK	Calibration Date	: 07/03/18 05:04		
Lab File ID	: VJ180703A04	Init. Calib. Date(s)	06/13/18	06/13/18	
Sample No	: WG1132225-2	Init. Calib. Times	19:40	23:35	
Channel	:				

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	79	0
Dichlorodifluoromethane	10	10.756	-	-7.6	20	78	0
Chloromethane	0.56	0.595	-	-6.2	20	98	0
Vinyl chloride	10	11.097	-	-11	20	86	0
Bromomethane	0.209	0.236	-	-12.9	20	91	0
Chloroethane	0.174	0.232	-	-33.3*	20	106	0
Trichlorofluoromethane	0.413	0.569	-	-37.8*	20	100	0
Ethyl ether	0.152	0.153	-	-0.7	20	83	0
1,1-Dichloroethene	0.277	0.314	-	-13.4	20	88	0
Carbon disulfide	0.719	0.748	-	-4	20	72	0
Methylene chloride	0.29	0.346	-	-19.3	20	93	0
Acetone	10	9.413	-	5.9	20	68	0
trans-1,2-Dichloroethene	0.3	0.345	-	-15	20	89	0
Methyl tert-butyl ether	0.886	0.838	-	5.4	20	75	0
Diisopropyl ether	1.758	1.679	-	4.5	20	74	0
1,1-Dichloroethane	0.72	0.768	-	-6.7	20	81	0
Ethyl tert-butyl ether	1.253	1.206	-	3.8	20	75	0
cis-1,2-Dichloroethene	0.396	0.402	-	-1.5	20	73	0
2,2-Dichloropropane	0.52	0.609	-	-17.1	20	88	0
Bromochloromethane	0.169	0.192	-	-13.6	20	86	0
Chloroform	0.626	0.659	-	-5.3	20	81	0
Carbon tetrachloride	0.489	0.55	-	-12.5	20	86	0
Tetrahydrofuran	0.148	0.134	-	9.5	20	73	0
Dibromofluoromethane	0.225	0.24	-	-6.7	20	84	0
1,1,1-Trichloroethane	0.576	0.632	-	-9.7	20	85	0
2-Butanone	10	8.739	-	12.6	20	72	0
1,1-Dichloropropene	0.524	0.555	-	-5.9	20	81	0
Benzene	1.542	1.583	-	-2.7	20	82	0
tert-Amyl methyl ether	0.999	0.951	-	4.8	20	78	0
1,2-Dichloroethane-d4	0.28	0.277	-	1.1	20	79	0
1,2-Dichloroethane	0.486	0.496	-	-2.1	20	79	0
Trichloroethene	0.377	0.399	-	-5.8	20	82	0
Dibromomethane	0.2	0.197	-	1.5	20	79	0
1,2-Dichloropropane	0.43	0.442	-	-2.8	20	80	0
Bromodichloromethane	0.476	0.48	-	-0.8	20	80	0
1,4-Dioxane	0.00289	0.00283*	-	2.1	20	87	0
cis-1,3-Dichloropropene	0.621	0.597	-	3.9	20	75	0
Chlorobenzene-d5	1	1	-	0	20	82	0
Toluene-d8	1.283	1.254	-	2.3	20	81	0
Toluene	1.279	1.281	-	-0.2	20	82	0
4-Methyl-2-pentanone	0.153	0.135	-	11.8	20	72	0
Tetrachloroethene	0.546	0.584	-	-7	20	86	0
trans-1,3-Dichloropropene	0.659	0.629	-	4.6	20	76	0
1,1,2-Trichloroethane	0.316	0.292	-	7.6	20	75	0
Chlorodibromomethane	0.438	0.423	-	3.4	20	80	0

* Value outside of QC limits.



Continuing Calibration Form 7

Client	: FSL Associates	Lab Number	: L1824997			
Project Name	: CUMMINGS BEVERLY	Project Number	:			
Instrument ID	: JACK	Calibration Date	: 07/03/18 05:04			
Lab File ID	: VJ180703A04	Init. Calib. Date(s)	06/13/18	06/13/18		
Sample No	: WG1132225-2	Init. Calib. Times	19:40	23:35		
Channel	:					

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
1,3-Dichloropropane	0.638	0.611	-	4.2	20	78	0
1,2-Dibromoethane	0.381	0.365	-	4.2	20	80	0
2-Hexanone	0.363	0.28	-	22.9*	20	68	0
Chlorobenzene	1.414	1.424	-	-0.7	20	82	0
Ethylbenzene	2.41	2.446	-	-1.5	20	82	0
1,1,1,2-Tetrachloroethane	0.483	0.482	-	0.2	20	81	0
p/m Xylene	1.161	1.154	-	0.6	20	72	0
o Xylene	0.93	0.907	-	2.5	20	76	0
Styrene	1.493	1.502	-	-0.6	20	78	0
1,4-Dichlorobenzene-d4	1	1	-	0	20	85	0
Bromoform	0.478	0.458	-	4.2	20	79	0
Isopropylbenzene	4.753	4.898	-	-3.1	20	84	0
4-Bromofluorobenzene	0.898	0.89	-	0.9	20	82	0
Bromobenzene	1.079	1.134	-	-5.1	20	88	0
n-Propylbenzene	5.208	5.204	-	0.1	20	82	0
1,1,2,2-Tetrachloroethane	0.819	0.792	-	3.3	20	81	0
2-Chlorotoluene	3.357	3.354	-	0.1	20	82	0
1,3,5-Trimethylbenzene	3.716	3.654	-	1.7	20	82	0
1,2,3-Trichloropropane	0.659	0.651	-	1.2	20	82	0
4-Chlorotoluene	3.156	3.056	-	3.2	20	80	0
tert-Butylbenzene	3.293	3.158	-	4.1	20	80	0
1,2,4-Trimethylbenzene	3.611	3.395	-	6	20	80	0
sec-Butylbenzene	4.429	4.184	-	5.5	20	80	0
p-Isopropyltoluene	3.836	3.618	-	5.7	20	79	0
1,3-Dichlorobenzene	2.062	2.132	-	-3.4	20	86	0
1,4-Dichlorobenzene	2.027	2.04	-	-0.6	20	85	0
n-Butylbenzene	2.865	2.54	-	11.3	20	77	0
1,2-Dichlorobenzene	1.881	1.9	-	-1	20	85	0
1,2-Dibromo-3-chloropropan	0.144	0.133	-	7.6	20	88	0
Hexachlorobutadiene	0.37	0.386	-	-4.3	20	85	0
1,2,4-Trichlorobenzene	10	9.185	-	8.1	20	88	0
Naphthalene	10	9.18	-	8.2	20	88	0
1,2,3-Trichlorobenzene	10	9.298	-	7	20	89	0

* Value outside of QC limits.

APPENDIX C

INDOOR AIR SAMPLING CANISTER FIELD RECORDS AND ANALYTICAL ANALYSIS RESULTS



*Environmental Engineering, Civil Engineering
Forensic Engineering, Construction Services*

*Environmental Engineering
Construction Services*

Forensic Engineering

Civil Engineering

Air Sampling Log-Sheet

Site: Building 100, Cummings Center, Beverly, MA

Sample Date	Canister I.D. No.	Regulator I.D. No	FSL Sample I.D.	Sample Location	Pressure Start	Pressure End	Time Start	Time End
7/19/2018 to 7/20/2018	1513	0284	S-135E.1	Suite 135E	-29.82	-0.0	3:08 PM	2:20 PM
7/19/2018 to 7/20/2018	2483	0062	S-135E.2	Suite 135E	-30.45	-0.22	3:10 PM	2:52 PM
7/19/2018 to 7/20/2018	2057	0335	S-135E.3	Suite 135E	-31.08	-0.22	3:10 PM	2:52 PM
7/19/2018 to 7/20/2018	2117	0962	S-140A.1	Suite 140A	-30.10	-4.45	2:45 PM	2:37 PM
7/19/2018 to 7/20/2018	618	0729	S-140A.2	Suite 140A	-30.20	-1.07	2:48 PM	2:39 PM
7/19/2018 to 7/20/2018	2259	0234	S-140A.3	Suite 140A	-30.26	-0.41	2.52 PM	2.43 PM
7/19/2018 to 7/20/2018	2113	0950	S-140A.4	Suite 140A	-30.58	-2.50	2:53 PM	2:42 PM
7/19/2018 to 7/20/2018	976	0846	DUP	Duplicate of S-140A.4	-30.24	-0.14	2:53 PM	2:41 PM



ANALYTICAL REPORT

Lab Number:	L1828020
Client:	FSL Associates 358 Chestnut Hill Ave. Brighton, MA 02135
ATTN:	Bruce Hoskins
Phone:	(617) 232-0001
Project Name:	CUMMINGS BEVERLY
Project Number:	CUMMINGS BEVERLY
Report Date:	07/27/18

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1828020-01	S-135E.1	AIR	BEVERLY, MA	07/20/18 14:50	07/20/18
L1828020-02	S-135E.2	AIR	BEVERLY, MA	07/20/18 14:52	07/20/18
L1828020-03	S-135E.3	AIR	BEVERLY, MA	07/20/18 14:54	07/20/18
L1828020-04	S-140A.1	AIR	BEVERLY, MA	07/20/18 14:37	07/20/18
L1828020-05	S-140A.2	AIR	BEVERLY, MA	07/20/18 14:39	07/20/18
L1828020-06	S-140A.3	AIR	BEVERLY, MA	07/20/18 14:43	07/20/18
L1828020-07	S-140A.4	AIR	BEVERLY, MA	07/20/18 14:42	07/20/18
L1828020-08	DUP	AIR	BEVERLY, MA	07/20/18 14:41	07/20/18

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEX data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Case Narrative (continued)

Volatile Organics in Air

Canisters were released from the laboratory on July 18, 2018. The canister certification results are provided as an addendum.

L1828020-04: The sample was re-analyzed on dilution in order to quantify the results within the calibration range. The results should be considered estimated, and are qualified with an E flag, for any compound that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound that exceeded the calibration range.

The WG1139926-3 LCS recoveries for 1,2,4-trichlorobenzene (146%), 1,2,3-trichlorobenzene (147%) and hexachlorobutadiene (150%) are above the upper 130% acceptance limit. All samples associated with this LCS do not have reportable amounts of these analytes.

WG1139926-5: The relative percent difference for naphthalene (27%) is above the RPD limit of 25%. This compound represented less than 10% of the compounds detected, therefore no further action was taken.

Petroleum Hydrocarbons in Air

All significant concentrations of non-petroleum VOCs detected in the TO-15 analysis were subtracted from the corresponding hydrocarbon ranges.

L1828020-01: Trimethylsilanol, hexanal and hexamethylcyclotrisiloxane are present in the C5-C8 Aliphatic Hydrocarbon range. The response for these analytes was not included in the calculation of the C5-C8 range result since they are not petroleum hydrocarbons.

L1828020-01: Limonene, alpha-pinene, beta-pinene, nonanal, decanal and unknown siloxanes are present in the C9-C12 Aliphatic Hydrocarbon range. The response for these analytes was not included in the calculation of the C9-C12 range result since they are not petroleum hydrocarbons.

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Case Narrative (continued)

L1828020-02: Trimethylsilanol, hexanal and hexamethylcyclotrisiloxane are present in the C5-C8 Aliphatic Hydrocarbon range. The response for these analytes was not included in the calculation of the C5-C8 range result since they are not petroleum hydrocarbons.

L1828020-02: Limonene, alpha-pinene, beta-pinene, nonanal, decanal and unknown siloxanes are present in the C9-C12 Aliphatic Hydrocarbon range. The response for these analytes was not included in the calculation of the C9-C12 range result since they are not petroleum hydrocarbons.

L1828020-03: Trimethylsilanol, hexanal and hexamethylcyclotrisiloxane are present in the C5-C8 Aliphatic Hydrocarbon range. The response for these analytes was not included in the calculation of the C5-C8 range result since they are not petroleum hydrocarbons.

L1828020-03: Limonene, alpha-pinene, beta-pinene, nonanal, decanal and unknown siloxanes are present in the C9-C12 Aliphatic Hydrocarbon range. The response for these analytes was not included in the calculation of the C9-C12 range result since they are not petroleum hydrocarbons.

L1828020-04: Trimethylsilanol, butanal, hexanal and hexamethylcyclotrisiloxane are present in the C5-C8 Aliphatic Hydrocarbon range. The response for these analytes was not included in the calculation of the C5-C8 range result since they are not petroleum hydrocarbons.

L1828020-04: Limonene and an unknown siloxane are present in the C9-C12 Aliphatic Hydrocarbon range. The response for these analytes was not included in the calculation of the C9-C12 range result since they are not petroleum hydrocarbons.

L1828020-05: Trimethylsilanol, butanal, hexanal and hexamethylcyclotrisiloxane are present in the C5-C8 Aliphatic Hydrocarbon range. The response for these analytes was not included in the calculation of the C5-C8 range result since they are not petroleum hydrocarbons.

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Case Narrative (continued)

L1828020-05: Limonene and an unknown siloxane are present in the C9-C12 Aliphatic Hydrocarbon range. The response for these analytes was not included in the calculation of the C9-C12 range result since they are not petroleum hydrocarbons.

L1828020-06: Trimethylsilanol, butanal, methyl methacrylate, hexanal, hexamethylcyclotrisiloxane and an unknown siloxane are present in the C5-C8 Aliphatic Hydrocarbon range. The response for these analytes was not included in the calculation of the C5-C8 range result since they are not petroleum hydrocarbons.

L1828020-06: Limonene, acetophenone and an unknown siloxane are present in the C9-C12 Aliphatic Hydrocarbon range. The response for these analytes was not included in the calculation of the C9-C12 range result since they are not petroleum hydrocarbons.

L1828020-07: Trimethylsilanol, butanal, methyl methacrylate, hexanal, hexamethylcyclotrisiloxane and an unknown siloxane are present in the C5-C8 Aliphatic Hydrocarbon range. The response for these analytes was not included in the calculation of the C5-C8 range result since they are not petroleum hydrocarbons.

L1828020-07: Limonene, acetophenone, unknown siloxanes and an unknown ketone are present in the C9-C12 Aliphatic Hydrocarbon range. The response for these analytes was not included in the calculation of the C9-C12 range result since they are not petroleum hydrocarbons.

L1828020-08: Trimethylsilanol, butanal, methyl methacrylate, hexanal, hexamethylcyclotrisiloxane and an unknown siloxane are present in the C5-C8 Aliphatic Hydrocarbon range. The response for these analytes was not included in the calculation of the C5-C8 range result since they are not petroleum hydrocarbons.

L1828020-08: Limonene, acetophenone, unknown siloxanes and an unknown ketone are present in the C9-C12 Aliphatic Hydrocarbon range. The response for these analytes was not included in the calculation of the C9-C12 range result since they are not petroleum hydrocarbons.

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

Christopher J. Anderson Christopher J. Anderson

Title: Technical Director/Representative

Date: 07/27/18

AIR



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID: L1828020-01
Client ID: S-135E.1
Sample Location: BEVERLY, MA

Date Collected: 07/20/18 14:50
Date Received: 07/20/18
Field Prep: Not Specified

Sample Depth:

Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 07/26/18 19:45
Analyst: MB

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab								
Propylene	0.179	0.500	0.034	0.308	0.861	0.059	J	1
Dichlorodifluoromethane	0.286	0.200	0.011	1.41	0.989	0.055		1
Chloromethane	0.400	0.200	0.048	0.826	0.413	0.099		1
Freon-114	ND	0.050	0.012	ND	0.349	0.081		1
Vinyl chloride	ND	0.020	0.006	ND	0.051	0.015		1
1,3-Butadiene	0.008	0.020	0.007	0.018	0.044	0.016	J	1
Bromomethane	0.009	0.020	0.008	0.035	0.078	0.031	J	1
Chloroethane	0.083	0.100	0.017	0.219	0.264	0.045	J	1
Ethanol	8.37	5.00	0.157	15.8	9.42	0.296		1
Vinyl bromide	ND	0.200	0.023	ND	0.874	0.101		1
Acetone	6.12	1.00	0.366	14.5	2.38	0.869		1
Trichlorofluoromethane	0.163	0.050	0.011	0.916	0.281	0.064		1
Isopropanol	3.46	0.500	0.153	8.50	1.23	0.376		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
Methylene chloride	0.393	0.500	0.250	1.37	1.74	0.869	J	1
3-Chloropropene	ND	0.200	0.020	ND	0.626	0.063		1
Carbon disulfide	0.115	0.200	0.063	0.358	0.623	0.196	J	1
Freon-113	0.055	0.050	0.013	0.422	0.383	0.097		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	0.015	0.020	0.007	0.061	0.081	0.028	J	1
Methyl tert butyl ether	ND	0.200	0.006	ND	0.721	0.022		1
Vinyl acetate	ND	1.00	0.027	ND	3.52	0.095		1
2-Butanone	0.464	0.500	0.016	1.37	1.47	0.047	J	1



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-01	Date Collected:	07/20/18 14:50
Client ID:	S-135E.1	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	Results	RL		
Volatile Organics in Air by SIM - Mansfield Lab							
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Ethyl Acetate	0.163	0.500	0.038	0.587	1.80	0.137	J 1
Chloroform	0.080	0.020	0.005	0.391	0.098	0.024	1
Tetrahydrofuran	0.718	0.500	0.037	2.12	1.47	0.109	1
1,2-Dichloroethane	0.037	0.020	0.005	0.150	0.081	0.020	1
n-Hexane	0.119	0.200	0.033	0.419	0.705	0.116	J 1
1,1,1-Trichloroethane	0.008	0.020	0.006	0.044	0.109	0.033	J 1
Benzene	0.077	0.100	0.019	0.246	0.319	0.061	J 1
Carbon tetrachloride	0.068	0.020	0.007	0.428	0.126	0.044	1
Cyclohexane	0.059	0.200	0.030	0.203	0.688	0.103	J 1
1,2-Dichloropropane	ND	0.020	0.008	ND	0.092	0.037	1
Bromodichloromethane	ND	0.020	0.008	ND	0.134	0.054	1
1,4-Dioxane	0.041	0.100	0.014	0.148	0.360	0.051	J 1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038	1
2,2,4-Trimethylpentane	0.079	0.200	0.027	0.369	0.934	0.126	J 1
Heptane	0.061	0.200	0.032	0.250	0.820	0.131	J 1
cis-1,3-Dichloropropene	ND	0.020	0.006	ND	0.091	0.027	1
4-Methyl-2-pentanone	1.58	0.500	0.005	6.48	2.05	0.021	1
trans-1,3-Dichloropropene	ND	0.020	0.008	ND	0.091	0.036	1
1,1,2-Trichloroethane	ND	0.020	0.004	ND	0.109	0.022	1
Toluene	0.433	0.050	0.006	1.63	0.188	0.023	1
2-Hexanone	ND	0.200	0.030	ND	0.820	0.123	1
Dibromochloromethane	ND	0.020	0.008	ND	0.170	0.068	1
1,2-Dibromoethane	ND	0.020	0.008	ND	0.154	0.062	1
Tetrachloroethene	0.018	0.020	0.008	0.122	0.136	0.054	J 1
1,1,1,2-Tetrachloroethane	ND	0.020	0.006	ND	0.137	0.041	1



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-01	Date Collected:	07/20/18 14:50
Client ID:	S-135E.1	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Results	ppbV			ug/m3			Dilution Factor
		RL	MDL		RL	MDL	Qualifier	
Volatile Organics in Air by SIM - Mansfield Lab								
Chlorobenzene	ND	0.100	0.007	ND	0.461	0.032		1
Ethylbenzene	0.118	0.020	0.007	0.513	0.087	0.030		1
p/m-Xylene	1.56	0.040	0.007	6.78	0.174	0.030		1
Bromoform	ND	0.020	0.015	ND	0.207	0.155		1
Styrene	0.604	0.020	0.007	2.57	0.085	0.030		1
1,1,2,2-Tetrachloroethane	ND	0.020	0.007	ND	0.137	0.048		1
o-Xylene	0.172	0.020	0.008	0.747	0.087	0.035		1
4-Ethyltoluene	0.023	0.020	0.010	0.113	0.098	0.049		1
1,3,5-Trimethylbenzene	0.031	0.020	0.005	0.152	0.098	0.025		1
1,2,4-Trimethylbenzene	0.094	0.020	0.007	0.462	0.098	0.034		1
Benzyl chloride	ND	0.200	0.037	ND	1.04	0.192		1
1,3-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036		1
1,4-Dichlorobenzene	0.010	0.020	0.008	0.060	0.120	0.048	J	1
1,2-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036		1
1,2,4-Trichlorobenzene	ND	0.050	0.010	ND	0.371	0.074		1
Naphthalene	0.314	0.050	0.008	1.65	0.262	0.042		1
Hexachlorobutadiene	ND	0.050	0.007	ND	0.533	0.075		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	138		60-140
bromochloromethane	125		60-140
chlorobenzene-d5	123		60-140



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID: L1828020-02
Client ID: S-135E.2
Sample Location: BEVERLY, MA

Date Collected: 07/20/18 14:52
Date Received: 07/20/18
Field Prep: Not Specified

Sample Depth:

Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 07/26/18 20:18
Analyst: MB

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab								
Propylene	0.175	0.500	0.034	0.301	0.861	0.059	J	1
Dichlorodifluoromethane	0.295	0.200	0.011	1.46	0.989	0.055		1
Chloromethane	0.422	0.200	0.048	0.871	0.413	0.099		1
Freon-114	ND	0.050	0.012	ND	0.349	0.081		1
Vinyl chloride	ND	0.020	0.006	ND	0.051	0.015		1
1,3-Butadiene	0.008	0.020	0.007	0.018	0.044	0.016	J	1
Bromomethane	ND	0.020	0.008	ND	0.078	0.031		1
Chloroethane	0.079	0.100	0.017	0.208	0.264	0.045	J	1
Ethanol	8.00	5.00	0.157	15.1	9.42	0.296		1
Vinyl bromide	ND	0.200	0.023	ND	0.874	0.101		1
Acetone	6.21	1.00	0.366	14.8	2.38	0.869		1
Trichlorofluoromethane	0.166	0.050	0.011	0.933	0.281	0.064		1
Isopropanol	3.63	0.500	0.153	8.92	1.23	0.376		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
Methylene chloride	ND	0.500	0.250	ND	1.74	0.869		1
3-Chloropropene	ND	0.200	0.020	ND	0.626	0.063		1
Carbon disulfide	0.122	0.200	0.063	0.380	0.623	0.196	J	1
Freon-113	0.056	0.050	0.013	0.429	0.383	0.097		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	0.017	0.020	0.007	0.069	0.081	0.028	J	1
Methyl tert butyl ether	ND	0.200	0.006	ND	0.721	0.022		1
Vinyl acetate	ND	1.00	0.027	ND	3.52	0.095		1
2-Butanone	0.481	0.500	0.016	1.42	1.47	0.047	J	1



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-02	Date Collected:	07/20/18 14:52
Client ID:	S-135E.2	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	Results	RL		
Volatile Organics in Air by SIM - Mansfield Lab							
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Ethyl Acetate	0.152	0.500	0.038	0.548	1.80	0.137	J 1
Chloroform	0.076	0.020	0.005	0.371	0.098	0.024	1
Tetrahydrofuran	0.755	0.500	0.037	2.23	1.47	0.109	1
1,2-Dichloroethane	0.034	0.020	0.005	0.138	0.081	0.020	1
n-Hexane	0.104	0.200	0.033	0.367	0.705	0.116	J 1
1,1,1-Trichloroethane	0.009	0.020	0.006	0.049	0.109	0.033	J 1
Benzene	0.084	0.100	0.019	0.268	0.319	0.061	J 1
Carbon tetrachloride	0.075	0.020	0.007	0.472	0.126	0.044	1
Cyclohexane	0.162	0.200	0.030	0.558	0.688	0.103	J 1
1,2-Dichloropropane	ND	0.020	0.008	ND	0.092	0.037	1
Bromodichloromethane	ND	0.020	0.008	ND	0.134	0.054	1
1,4-Dioxane	0.041	0.100	0.014	0.148	0.360	0.051	J 1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038	1
2,2,4-Trimethylpentane	0.088	0.200	0.027	0.411	0.934	0.126	J 1
Heptane	0.067	0.200	0.032	0.275	0.820	0.131	J 1
cis-1,3-Dichloropropene	ND	0.020	0.006	ND	0.091	0.027	1
4-Methyl-2-pentanone	1.76	0.500	0.005	7.21	2.05	0.021	1
trans-1,3-Dichloropropene	ND	0.020	0.008	ND	0.091	0.036	1
1,1,2-Trichloroethane	ND	0.020	0.004	ND	0.109	0.022	1
Toluene	0.412	0.050	0.006	1.55	0.188	0.023	1
2-Hexanone	ND	0.200	0.030	ND	0.820	0.123	1
Dibromochloromethane	ND	0.020	0.008	ND	0.170	0.068	1
1,2-Dibromoethane	ND	0.020	0.008	ND	0.154	0.062	1
Tetrachloroethene	0.026	0.020	0.008	0.176	0.136	0.054	1
1,1,1,2-Tetrachloroethane	ND	0.020	0.006	ND	0.137	0.041	1



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-02	Date Collected:	07/20/18 14:52
Client ID:	S-135E.2	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Results	ppbV			ug/m3			Dilution Factor
		RL	MDL		RL	MDL	Qualifier	
Volatile Organics in Air by SIM - Mansfield Lab								
Chlorobenzene	ND	0.100	0.007	ND	0.461	0.032		1
Ethylbenzene	0.105	0.020	0.007	0.456	0.087	0.030		1
p/m-Xylene	1.39	0.040	0.007	6.04	0.174	0.030		1
Bromoform	ND	0.020	0.015	ND	0.207	0.155		1
Styrene	0.509	0.020	0.007	2.17	0.085	0.030		1
1,1,2,2-Tetrachloroethane	ND	0.020	0.007	ND	0.137	0.048		1
o-Xylene	0.150	0.020	0.008	0.652	0.087	0.035		1
4-Ethyltoluene	0.024	0.020	0.010	0.118	0.098	0.049		1
1,3,5-Trimethylbenzene	0.030	0.020	0.005	0.147	0.098	0.025		1
1,2,4-Trimethylbenzene	0.091	0.020	0.007	0.447	0.098	0.034		1
Benzyl chloride	ND	0.200	0.037	ND	1.04	0.192		1
1,3-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036		1
1,4-Dichlorobenzene	ND	0.020	0.008	ND	0.120	0.048		1
1,2-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036		1
1,2,4-Trichlorobenzene	ND	0.050	0.010	ND	0.371	0.074		1
Naphthalene	0.116	0.050	0.008	0.608	0.262	0.042		1
Hexachlorobutadiene	ND	0.050	0.007	ND	0.533	0.075		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	118		60-140
bromochloromethane	121		60-140
chlorobenzene-d5	116		60-140



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-03	Date Collected:	07/20/18 14:54
Client ID:	S-135E.3	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Matrix: Air
Analytical Method: 48,TO-15-SIM
Analytical Date: 07/26/18 20:50
Analyst: MB

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab							
Propylene	0.220	0.500	0.034	0.379	0.861	0.059	J 1
Dichlorodifluoromethane	0.279	0.200	0.011	1.38	0.989	0.055	1
Chloromethane	0.494	0.200	0.048	1.02	0.413	0.099	1
Freon-114	0.012	0.050	0.012	0.084	0.349	0.081	J 1
Vinyl chloride	ND	0.020	0.006	ND	0.051	0.015	1
1,3-Butadiene	0.010	0.020	0.007	0.022	0.044	0.016	J 1
Bromomethane	0.013	0.020	0.008	0.051	0.078	0.031	J 1
Chloroethane	0.097	0.100	0.017	0.256	0.264	0.045	J 1
Ethanol	10.0	5.00	0.157	18.8	9.42	0.296	1
Vinyl bromide	ND	0.200	0.023	ND	0.874	0.101	1
Acetone	7.36	1.00	0.366	17.5	2.38	0.869	1
Trichlorofluoromethane	0.180	0.050	0.011	1.01	0.281	0.064	1
Isopropanol	4.35	0.500	0.153	10.7	1.23	0.376	1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Methylene chloride	0.267	0.500	0.250	0.928	1.74	0.869	J 1
3-Chloropropene	ND	0.200	0.020	ND	0.626	0.063	1
Carbon disulfide	0.133	0.200	0.063	0.414	0.623	0.196	J 1
Freon-113	0.062	0.050	0.013	0.475	0.383	0.097	1
trans-1,2-Dichloroethene	0.006	0.020	0.006	0.024	0.079	0.024	J 1
1,1-Dichloroethane	0.017	0.020	0.007	0.069	0.081	0.028	J 1
Methyl tert butyl ether	ND	0.200	0.006	ND	0.721	0.022	1
Vinyl acetate	ND	1.00	0.027	ND	3.52	0.095	1
2-Butanone	0.519	0.500	0.016	1.53	1.47	0.047	1



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-03	Date Collected:	07/20/18 14:54
Client ID:	S-135E.3	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	Results	RL		
Volatile Organics in Air by SIM - Mansfield Lab							
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Ethyl Acetate	0.139	0.500	0.038	0.501	1.80	0.137	J 1
Chloroform	0.072	0.020	0.005	0.352	0.098	0.024	1
Tetrahydrofuran	0.742	0.500	0.037	2.19	1.47	0.109	1
1,2-Dichloroethane	0.034	0.020	0.005	0.138	0.081	0.020	1
n-Hexane	0.099	0.200	0.033	0.349	0.705	0.116	J 1
1,1,1-Trichloroethane	0.010	0.020	0.006	0.055	0.109	0.033	J 1
Benzene	0.076	0.100	0.019	0.243	0.319	0.061	J 1
Carbon tetrachloride	0.071	0.020	0.007	0.447	0.126	0.044	1
Cyclohexane	0.041	0.200	0.030	0.141	0.688	0.103	J 1
1,2-Dichloropropane	ND	0.020	0.008	ND	0.092	0.037	1
Bromodichloromethane	ND	0.020	0.008	ND	0.134	0.054	1
1,4-Dioxane	0.046	0.100	0.014	0.166	0.360	0.051	J 1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038	1
2,2,4-Trimethylpentane	0.076	0.200	0.027	0.355	0.934	0.126	J 1
Heptane	0.061	0.200	0.032	0.250	0.820	0.131	J 1
cis-1,3-Dichloropropene	ND	0.020	0.006	ND	0.091	0.027	1
4-Methyl-2-pentanone	1.68	0.500	0.005	6.88	2.05	0.021	1
trans-1,3-Dichloropropene	ND	0.020	0.008	ND	0.091	0.036	1
1,1,2-Trichloroethane	ND	0.020	0.004	ND	0.109	0.022	1
Toluene	0.355	0.050	0.006	1.34	0.188	0.023	1
2-Hexanone	ND	0.200	0.030	ND	0.820	0.123	1
Dibromochloromethane	ND	0.020	0.008	ND	0.170	0.068	1
1,2-Dibromoethane	ND	0.020	0.008	ND	0.154	0.062	1
Tetrachloroethene	0.016	0.020	0.008	0.108	0.136	0.054	J 1
1,1,1,2-Tetrachloroethane	ND	0.020	0.006	ND	0.137	0.041	1



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-03	Date Collected:	07/20/18 14:54
Client ID:	S-135E.3	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Results	ppbV			ug/m3			Dilution Factor
		RL	MDL		RL	MDL	Qualifier	
Volatile Organics in Air by SIM - Mansfield Lab								
Chlorobenzene	ND	0.100	0.007	ND	0.461	0.032		1
Ethylbenzene	0.091	0.020	0.007	0.395	0.087	0.030		1
p/m-Xylene	1.31	0.040	0.007	5.69	0.174	0.030		1
Bromoform	ND	0.020	0.015	ND	0.207	0.155		1
Styrene	0.488	0.020	0.007	2.08	0.085	0.030		1
1,1,2,2-Tetrachloroethane	ND	0.020	0.007	ND	0.137	0.048		1
o-Xylene	0.140	0.020	0.008	0.608	0.087	0.035		1
4-Ethyltoluene	0.018	0.020	0.010	0.089	0.098	0.049	J	1
1,3,5-Trimethylbenzene	0.023	0.020	0.005	0.113	0.098	0.025		1
1,2,4-Trimethylbenzene	0.068	0.020	0.007	0.334	0.098	0.034		1
Benzyl chloride	ND	0.200	0.037	ND	1.04	0.192		1
1,3-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036		1
1,4-Dichlorobenzene	ND	0.020	0.008	ND	0.120	0.048		1
1,2-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036		1
1,2,4-Trichlorobenzene	ND	0.050	0.010	ND	0.371	0.074		1
Naphthalene	0.214	0.050	0.008	1.12	0.262	0.042		1
Hexachlorobutadiene	ND	0.050	0.007	ND	0.533	0.075		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	101		60-140
bromochloromethane	106		60-140
chlorobenzene-d5	99		60-140



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-04	Date Collected:	07/20/18 14:37
Client ID:	S-140A.1	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 07/26/18 21:56
Analyst: MB

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab							
Propylene	3.21	0.500	0.034	5.52	0.861	0.059	1
Dichlorodifluoromethane	0.373	0.200	0.011	1.84	0.989	0.055	1
Chloromethane	0.548	0.200	0.048	1.13	0.413	0.099	1
Freon-114	0.012	0.050	0.012	0.084	0.349	0.081	J 1
Vinyl chloride	ND	0.020	0.006	ND	0.051	0.015	1
1,3-Butadiene	0.058	0.020	0.007	0.128	0.044	0.016	1
Bromomethane	0.010	0.020	0.008	0.039	0.078	0.031	J 1
Chloroethane	5.15	0.100	0.017	13.6	0.264	0.045	1
Ethanol	253	5.00	0.157	477	9.42	0.296	E 1
Vinyl bromide	ND	0.200	0.023	ND	0.874	0.101	1
Acetone	34.8	1.00	0.366	82.7	2.38	0.869	1
Trichlorofluoromethane	0.241	0.050	0.011	1.35	0.281	0.064	1
Isopropanol	79.5	0.500	0.153	195	1.23	0.376	1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Methylene chloride	0.834	0.500	0.250	2.90	1.74	0.869	1
3-Chloropropene	ND	0.200	0.020	ND	0.626	0.063	1
Carbon disulfide	0.091	0.200	0.063	0.283	0.623	0.196	J 1
Freon-113	0.063	0.050	0.013	0.483	0.383	0.097	1
trans-1,2-Dichloroethene	0.006	0.020	0.006	0.024	0.079	0.024	J 1
1,1-Dichloroethane	0.009	0.020	0.007	0.036	0.081	0.028	J 1
Methyl tert butyl ether	ND	0.200	0.006	ND	0.721	0.022	1
Vinyl acetate	ND	1.00	0.027	ND	3.52	0.095	1
2-Butanone	2.72	0.500	0.016	8.02	1.47	0.047	1



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-04	Date Collected:	07/20/18 14:37
Client ID:	S-140A.1	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	Results	RL		
Volatile Organics in Air by SIM - Mansfield Lab							
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Ethyl Acetate	2.30	0.500	0.038	8.29	1.80	0.137	1
Chloroform	0.183	0.020	0.005	0.894	0.098	0.024	1
Tetrahydrofuran	0.515	0.500	0.037	1.52	1.47	0.109	1
1,2-Dichloroethane	0.029	0.020	0.005	0.117	0.081	0.020	1
n-Hexane	0.743	0.200	0.033	2.62	0.705	0.116	1
1,1,1-Trichloroethane	0.274	0.020	0.006	1.49	0.109	0.033	1
Benzene	0.143	0.100	0.019	0.457	0.319	0.061	1
Carbon tetrachloride	0.073	0.020	0.007	0.459	0.126	0.044	1
Cyclohexane	0.410	0.200	0.030	1.41	0.688	0.103	1
1,2-Dichloropropane	0.008	0.020	0.008	0.037	0.092	0.037	J 1
Bromodichloromethane	0.020	0.020	0.008	0.134	0.134	0.054	1
1,4-Dioxane	0.026	0.100	0.014	0.094	0.360	0.051	J 1
Trichloroethene	0.057	0.020	0.007	0.306	0.107	0.038	1
2,2,4-Trimethylpentane	ND	0.200	0.027	ND	0.934	0.126	1
Heptane	1.20	0.200	0.032	4.92	0.820	0.131	1
cis-1,3-Dichloropropene	ND	0.020	0.006	ND	0.091	0.027	1
4-Methyl-2-pentanone	0.612	0.500	0.005	2.51	2.05	0.021	1
trans-1,3-Dichloropropene	ND	0.020	0.008	ND	0.091	0.036	1
1,1,2-Trichloroethane	ND	0.020	0.004	ND	0.109	0.022	1
Toluene	4.10	0.050	0.006	15.5	0.188	0.023	1
2-Hexanone	0.094	0.200	0.030	0.385	0.820	0.123	J 1
Dibromochloromethane	ND	0.020	0.008	ND	0.170	0.068	1
1,2-Dibromoethane	ND	0.020	0.008	ND	0.154	0.062	1
Tetrachloroethene	0.055	0.020	0.008	0.373	0.136	0.054	1
1,1,1,2-Tetrachloroethane	ND	0.020	0.006	ND	0.137	0.041	1



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID: L1828020-04 Date Collected: 07/20/18 14:37
Client ID: S-140A.1 Date Received: 07/20/18
Sample Location: BEVERLY, MA Field Prep: Not Specified

Sample Depth:

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab							
Chlorobenzene	0.016	0.100	0.007	0.074	0.461	0.032	J 1
Ethylbenzene	2.48	0.020	0.007	10.8	0.087	0.030	1
p/m-Xylene	15.3	0.040	0.007	66.5	0.174	0.030	1
Bromoform	ND	0.020	0.015	ND	0.207	0.155	1
Styrene	5.75	0.020	0.007	24.5	0.085	0.030	1
1,1,2,2-Tetrachloroethane	ND	0.020	0.007	ND	0.137	0.048	1
o-Xylene	5.43	0.020	0.008	23.6	0.087	0.035	1
4-Ethyltoluene	1.65	0.020	0.010	8.11	0.098	0.049	1
1,3,5-Trimethylbenzene	1.65	0.020	0.005	8.11	0.098	0.025	1
1,2,4-Trimethylbenzene	5.80	0.020	0.007	28.5	0.098	0.034	1
Benzyl chloride	ND	0.200	0.037	ND	1.04	0.192	1
1,3-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036	1
1,4-Dichlorobenzene	0.010	0.020	0.008	0.060	0.120	0.048	J 1
1,2-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036	1
1,2,4-Trichlorobenzene	ND	0.050	0.010	ND	0.371	0.074	1
Naphthalene	0.348	0.050	0.008	1.82	0.262	0.042	1
Hexachlorobutadiene	ND	0.050	0.007	ND	0.533	0.075	1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	92		60-140
bromochloromethane	95		60-140
chlorobenzene-d5	90		60-140



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-04 D	Date Collected:	07/20/18 14:37
Client ID:	S-140A.1	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Matrix: Air
Analytical Method: 48,TO-15-SIM
Analytical Date: 07/27/18 09:28
Analyst: MB

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab								
Ethanol	235	10.0	0.314	443	18.8	0.592		2

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	102		60-140
bromochloromethane	104		60-140
chlorobenzene-d5	95		60-140

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-05	Date Collected:	07/20/18 14:39
Client ID:	S-140A.2	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Matrix: Air
Analytical Method: 48,TO-15-SIM
Analytical Date: 07/26/18 22:28
Analyst: MB

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab							
Propylene	2.36	0.500	0.034	4.06	0.861	0.059	1
Dichlorodifluoromethane	0.371	0.200	0.011	1.83	0.989	0.055	1
Chloromethane	0.506	0.200	0.048	1.04	0.413	0.099	1
Freon-114	0.012	0.050	0.012	0.084	0.349	0.081	J 1
Vinyl chloride	ND	0.020	0.006	ND	0.051	0.015	1
1,3-Butadiene	0.054	0.020	0.007	0.119	0.044	0.016	1
Bromomethane	0.012	0.020	0.008	0.047	0.078	0.031	J 1
Chloroethane	5.49	0.100	0.017	14.5	0.264	0.045	1
Ethanol	239	5.00	0.157	450	9.42	0.296	1
Vinyl bromide	ND	0.200	0.023	ND	0.874	0.101	1
Acetone	54.1	1.00	0.366	129	2.38	0.869	1
Trichlorofluoromethane	0.253	0.050	0.011	1.42	0.281	0.064	1
Isopropanol	75.5	0.500	0.153	186	1.23	0.376	1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Methylene chloride	0.610	0.500	0.250	2.12	1.74	0.869	1
3-Chloropropene	ND	0.200	0.020	ND	0.626	0.063	1
Carbon disulfide	0.099	0.200	0.063	0.308	0.623	0.196	J 1
Freon-113	0.061	0.050	0.013	0.468	0.383	0.097	1
trans-1,2-Dichloroethene	0.006	0.020	0.006	0.024	0.079	0.024	J 1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028	1
Methyl tert butyl ether	ND	0.200	0.006	ND	0.721	0.022	1
Vinyl acetate	ND	1.00	0.027	ND	3.52	0.095	1
2-Butanone	2.51	0.500	0.016	7.40	1.47	0.047	1



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-05	Date Collected:	07/20/18 14:39
Client ID:	S-140A.2	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	Results	RL		
Volatile Organics in Air by SIM - Mansfield Lab							
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Ethyl Acetate	8.70	0.500	0.038	31.4	1.80	0.137	1
Chloroform	0.192	0.020	0.005	0.938	0.098	0.024	1
Tetrahydrofuran	0.753	0.500	0.037	2.22	1.47	0.109	1
1,2-Dichloroethane	0.030	0.020	0.005	0.121	0.081	0.020	1
n-Hexane	0.765	0.200	0.033	2.70	0.705	0.116	1
1,1,1-Trichloroethane	0.658	0.020	0.006	3.59	0.109	0.033	1
Benzene	0.152	0.100	0.019	0.486	0.319	0.061	1
Carbon tetrachloride	0.074	0.020	0.007	0.465	0.126	0.044	1
Cyclohexane	0.347	0.200	0.030	1.19	0.688	0.103	1
1,2-Dichloropropane	ND	0.020	0.008	ND	0.092	0.037	1
Bromodichloromethane	ND	0.020	0.008	ND	0.134	0.054	1
1,4-Dioxane	0.029	0.100	0.014	0.105	0.360	0.051	J 1
Trichloroethene	0.061	0.020	0.007	0.328	0.107	0.038	1
2,2,4-Trimethylpentane	ND	0.200	0.027	ND	0.934	0.126	1
Heptane	5.00	0.200	0.032	20.5	0.820	0.131	1
cis-1,3-Dichloropropene	ND	0.020	0.006	ND	0.091	0.027	1
4-Methyl-2-pentanone	0.631	0.500	0.005	2.59	2.05	0.021	1
trans-1,3-Dichloropropene	ND	0.020	0.008	ND	0.091	0.036	1
1,1,2-Trichloroethane	ND	0.020	0.004	ND	0.109	0.022	1
Toluene	5.67	0.050	0.006	21.4	0.188	0.023	1
2-Hexanone	0.100	0.200	0.030	0.410	0.820	0.123	J 1
Dibromochloromethane	ND	0.020	0.008	ND	0.170	0.068	1
1,2-Dibromoethane	ND	0.020	0.008	ND	0.154	0.062	1
Tetrachloroethene	0.056	0.020	0.008	0.380	0.136	0.054	1
1,1,1,2-Tetrachloroethane	ND	0.020	0.006	ND	0.137	0.041	1



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-05	Date Collected:	07/20/18 14:39
Client ID:	S-140A.2	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Results	ppbV			ug/m3			Qualifier	Dilution Factor
		RL	MDL	Results	RL	MDL			
Volatile Organics in Air by SIM - Mansfield Lab									
Chlorobenzene	ND	0.100	0.007	ND	0.461	0.032		1	
Ethylbenzene	2.87	0.020	0.007	12.5	0.087	0.030		1	
p/m-Xylene	18.0	0.040	0.007	78.2	0.174	0.030		1	
Bromoform	ND	0.020	0.015	ND	0.207	0.155		1	
Styrene	5.69	0.020	0.007	24.2	0.085	0.030		1	
1,1,2,2-Tetrachloroethane	ND	0.020	0.007	ND	0.137	0.048		1	
o-Xylene	6.02	0.020	0.008	26.1	0.087	0.035		1	
4-Ethyltoluene	1.52	0.020	0.010	7.47	0.098	0.049		1	
1,3,5-Trimethylbenzene	1.58	0.020	0.005	7.77	0.098	0.025		1	
1,2,4-Trimethylbenzene	5.55	0.020	0.007	27.3	0.098	0.034		1	
Benzyl chloride	ND	0.200	0.037	ND	1.04	0.192		1	
1,3-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036		1	
1,4-Dichlorobenzene	0.016	0.020	0.008	0.096	0.120	0.048	J	1	
1,2-Dichlorobenzene	0.013	0.020	0.006	0.078	0.120	0.036	J	1	
1,2,4-Trichlorobenzene	ND	0.050	0.010	ND	0.371	0.074		1	
Naphthalene	0.444	0.050	0.008	2.33	0.262	0.042		1	
Hexachlorobutadiene	ND	0.050	0.007	ND	0.533	0.075		1	

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	97		60-140
bromochloromethane	103		60-140
chlorobenzene-d5	98		60-140



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID: L1828020-06
Client ID: S-140A.3
Sample Location: BEVERLY, MA

Date Collected: 07/20/18 14:43
Date Received: 07/20/18
Field Prep: Not Specified

Sample Depth:
Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 07/26/18 23:01
Analyst: MB

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab								
Propylene	1.07	0.500	0.034	1.84	0.861	0.059		1
Dichlorodifluoromethane	0.273	0.200	0.011	1.35	0.989	0.055		1
Chloromethane	0.477	0.200	0.048	0.985	0.413	0.099		1
Freon-114	ND	0.050	0.012	ND	0.349	0.081		1
Vinyl chloride	ND	0.020	0.006	ND	0.051	0.015		1
1,3-Butadiene	0.027	0.020	0.007	0.060	0.044	0.016		1
Bromomethane	ND	0.020	0.008	ND	0.078	0.031		1
Chloroethane	1.31	0.100	0.017	3.46	0.264	0.045		1
Ethanol	162	5.00	0.157	305	9.42	0.296		1
Vinyl bromide	ND	0.200	0.023	ND	0.874	0.101		1
Acetone	49.6	1.00	0.366	118	2.38	0.869		1
Trichlorofluoromethane	0.180	0.050	0.011	1.01	0.281	0.064		1
Isopropanol	19.9	0.500	0.153	48.9	1.23	0.376		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
Methylene chloride	0.311	0.500	0.250	1.08	1.74	0.869	J	1
3-Chloropropene	ND	0.200	0.020	ND	0.626	0.063		1
Carbon disulfide	ND	0.200	0.063	ND	0.623	0.196		1
Freon-113	0.058	0.050	0.013	0.445	0.383	0.097		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028		1
Methyl tert butyl ether	ND	0.200	0.006	ND	0.721	0.022		1
Vinyl acetate	ND	1.00	0.027	ND	3.52	0.095		1
2-Butanone	1.33	0.500	0.016	3.92	1.47	0.047		1



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-06	Date Collected:	07/20/18 14:43
Client ID:	S-140A.3	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	Results	RL		
Volatile Organics in Air by SIM - Mansfield Lab							
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Ethyl Acetate	6.03	0.500	0.038	21.7	1.80	0.137	1
Chloroform	0.114	0.020	0.005	0.557	0.098	0.024	1
Tetrahydrofuran	0.664	0.500	0.037	1.96	1.47	0.109	1
1,2-Dichloroethane	0.022	0.020	0.005	0.089	0.081	0.020	1
n-Hexane	0.314	0.200	0.033	1.11	0.705	0.116	1
1,1,1-Trichloroethane	0.039	0.020	0.006	0.213	0.109	0.033	1
Benzene	0.140	0.100	0.019	0.447	0.319	0.061	1
Carbon tetrachloride	0.071	0.020	0.007	0.447	0.126	0.044	1
Cyclohexane	0.196	0.200	0.030	0.675	0.688	0.103	J 1
1,2-Dichloropropane	ND	0.020	0.008	ND	0.092	0.037	1
Bromodichloromethane	ND	0.020	0.008	ND	0.134	0.054	1
1,4-Dioxane	0.024	0.100	0.014	0.087	0.360	0.051	J 1
Trichloroethene	0.164	0.020	0.007	0.881	0.107	0.038	1
2,2,4-Trimethylpentane	ND	0.200	0.027	ND	0.934	0.126	1
Heptane	3.06	0.200	0.032	12.5	0.820	0.131	1
cis-1,3-Dichloropropene	ND	0.020	0.006	ND	0.091	0.027	1
4-Methyl-2-pentanone	0.262	0.500	0.005	1.07	2.05	0.021	J 1
trans-1,3-Dichloropropene	ND	0.020	0.008	ND	0.091	0.036	1
1,1,2-Trichloroethane	ND	0.020	0.004	ND	0.109	0.022	1
Toluene	3.47	0.050	0.006	13.1	0.188	0.023	1
2-Hexanone	0.114	0.200	0.030	0.467	0.820	0.123	J 1
Dibromochloromethane	ND	0.020	0.008	ND	0.170	0.068	1
1,2-Dibromoethane	ND	0.020	0.008	ND	0.154	0.062	1
Tetrachloroethene	0.049	0.020	0.008	0.332	0.136	0.054	1
1,1,1,2-Tetrachloroethane	ND	0.020	0.006	ND	0.137	0.041	1



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-06	Date Collected:	07/20/18 14:43
Client ID:	S-140A.3	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab							
Chlorobenzene	0.014	0.100	0.007	0.065	0.461	0.032	J 1
Ethylbenzene	8.57	0.020	0.007	37.2	0.087	0.030	1
p/m-Xylene	58.4	0.040	0.007	254	0.174	0.030	1
Bromoform	ND	0.020	0.015	ND	0.207	0.155	1
Styrene	47.1	0.020	0.007	201	0.085	0.030	1
1,1,2,2-Tetrachloroethane	ND	0.020	0.007	ND	0.137	0.048	1
o-Xylene	19.2	0.020	0.008	83.4	0.087	0.035	1
4-Ethyltoluene	0.502	0.020	0.010	2.47	0.098	0.049	1
1,3,5-Trimethylbenzene	0.527	0.020	0.005	2.59	0.098	0.025	1
1,2,4-Trimethylbenzene	1.73	0.020	0.007	8.50	0.098	0.034	1
Benzyl chloride	ND	0.200	0.037	ND	1.04	0.192	1
1,3-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036	1
1,4-Dichlorobenzene	0.019	0.020	0.008	0.114	0.120	0.048	J 1
1,2-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036	1
1,2,4-Trichlorobenzene	ND	0.050	0.010	ND	0.371	0.074	1
Naphthalene	0.575	0.050	0.008	3.01	0.262	0.042	1
Hexachlorobutadiene	ND	0.050	0.007	ND	0.533	0.075	1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	115		60-140
bromochloromethane	119		60-140
chlorobenzene-d5	113		60-140



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID: L1828020-07
Client ID: S-140A.4
Sample Location: BEVERLY, MA

Date Collected: 07/20/18 14:42
Date Received: 07/20/18
Field Prep: Not Specified

Sample Depth:

Matrix: Air
Anaytical Method: 48,TO-15-SIM
Analytical Date: 07/26/18 23:33
Analyst: MB

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab							
Propylene	0.934	0.500	0.034	1.61	0.861	0.059	1
Dichlorodifluoromethane	0.296	0.200	0.011	1.46	0.989	0.055	1
Chloromethane	0.497	0.200	0.048	1.03	0.413	0.099	1
Freon-114	ND	0.050	0.012	ND	0.349	0.081	1
Vinyl chloride	ND	0.020	0.006	ND	0.051	0.015	1
1,3-Butadiene	0.030	0.020	0.007	0.066	0.044	0.016	1
Bromomethane	0.009	0.020	0.008	0.035	0.078	0.031	J 1
Chloroethane	1.43	0.100	0.017	3.77	0.264	0.045	1
Ethanol	173	5.00	0.157	326	9.42	0.296	1
Vinyl bromide	ND	0.200	0.023	ND	0.874	0.101	1
Acetone	49.6	1.00	0.366	118	2.38	0.869	1
Trichlorofluoromethane	0.190	0.050	0.011	1.07	0.281	0.064	1
Isopropanol	20.8	0.500	0.153	51.1	1.23	0.376	1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Methylene chloride	0.342	0.500	0.250	1.19	1.74	0.869	J 1
3-Chloropropene	ND	0.200	0.020	ND	0.626	0.063	1
Carbon disulfide	ND	0.200	0.063	ND	0.623	0.196	1
Freon-113	0.060	0.050	0.013	0.460	0.383	0.097	1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024	1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028	1
Methyl tert butyl ether	ND	0.200	0.006	ND	0.721	0.022	1
Vinyl acetate	ND	1.00	0.027	ND	3.52	0.095	1
2-Butanone	1.31	0.500	0.016	3.86	1.47	0.047	1



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-07	Date Collected:	07/20/18 14:42
Client ID:	S-140A.4	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	Results	RL		
Volatile Organics in Air by SIM - Mansfield Lab							
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Ethyl Acetate	6.60	0.500	0.038	23.8	1.80	0.137	1
Chloroform	0.117	0.020	0.005	0.571	0.098	0.024	1
Tetrahydrofuran	1.12	0.500	0.037	3.30	1.47	0.109	1
1,2-Dichloroethane	0.022	0.020	0.005	0.089	0.081	0.020	1
n-Hexane	0.303	0.200	0.033	1.07	0.705	0.116	1
1,1,1-Trichloroethane	0.038	0.020	0.006	0.207	0.109	0.033	1
Benzene	0.146	0.100	0.019	0.466	0.319	0.061	1
Carbon tetrachloride	0.071	0.020	0.007	0.447	0.126	0.044	1
Cyclohexane	0.186	0.200	0.030	0.640	0.688	0.103	J 1
1,2-Dichloropropane	ND	0.020	0.008	ND	0.092	0.037	1
Bromodichloromethane	ND	0.020	0.008	ND	0.134	0.054	1
1,4-Dioxane	0.027	0.100	0.014	0.097	0.360	0.051	J 1
Trichloroethene	0.172	0.020	0.007	0.924	0.107	0.038	1
2,2,4-Trimethylpentane	ND	0.200	0.027	ND	0.934	0.126	1
Heptane	3.67	0.200	0.032	15.0	0.820	0.131	1
cis-1,3-Dichloropropene	ND	0.020	0.006	ND	0.091	0.027	1
4-Methyl-2-pentanone	0.292	0.500	0.005	1.20	2.05	0.021	J 1
trans-1,3-Dichloropropene	ND	0.020	0.008	ND	0.091	0.036	1
1,1,2-Trichloroethane	ND	0.020	0.004	ND	0.109	0.022	1
Toluene	3.87	0.050	0.006	14.6	0.188	0.023	1
2-Hexanone	0.117	0.200	0.030	0.479	0.820	0.123	J 1
Dibromochloromethane	ND	0.020	0.008	ND	0.170	0.068	1
1,2-Dibromoethane	ND	0.020	0.008	ND	0.154	0.062	1
Tetrachloroethene	0.050	0.020	0.008	0.339	0.136	0.054	1
1,1,1,2-Tetrachloroethane	ND	0.020	0.006	ND	0.137	0.041	1



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-07	Date Collected:	07/20/18 14:42
Client ID:	S-140A.4	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Results	ppbV			ug/m3			Dilution Factor
		RL	MDL	Results	RL	MDL	Qualifier	
Volatile Organics in Air by SIM - Mansfield Lab								
Chlorobenzene	ND	0.100	0.007	ND	0.461	0.032		1
Ethylbenzene	8.64	0.020	0.007	37.5	0.087	0.030		1
p/m-Xylene	60.0	0.040	0.007	261	0.174	0.030		1
Bromoform	ND	0.020	0.015	ND	0.207	0.155		1
Styrene	40.8	0.020	0.007	174	0.085	0.030		1
1,1,2,2-Tetrachloroethane	ND	0.020	0.007	ND	0.137	0.048		1
o-Xylene	20.0	0.020	0.008	86.9	0.087	0.035		1
4-Ethyltoluene	0.502	0.020	0.010	2.47	0.098	0.049		1
1,3,5-Trimethylbenzene	0.521	0.020	0.005	2.56	0.098	0.025		1
1,2,4-Trimethylbenzene	1.78	0.020	0.007	8.75	0.098	0.034		1
Benzyl chloride	ND	0.200	0.037	ND	1.04	0.192		1
1,3-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036		1
1,4-Dichlorobenzene	0.010	0.020	0.008	0.060	0.120	0.048	J	1
1,2-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036		1
1,2,4-Trichlorobenzene	ND	0.050	0.010	ND	0.371	0.074		1
Naphthalene	0.622	0.050	0.008	3.26	0.262	0.042		1
Hexachlorobutadiene	ND	0.050	0.007	ND	0.533	0.075		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	111		60-140
bromochloromethane	112		60-140
chlorobenzene-d5	108		60-140



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-08	Date Collected:	07/20/18 14:41
Client ID:	DUP	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Matrix: Air
Analytical Method: 48,TO-15-SIM
Analytical Date: 07/27/18 00:06
Analyst: MB

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab							
Propylene	0.965	0.500	0.034	1.66	0.861	0.059	1
Dichlorodifluoromethane	0.344	0.200	0.011	1.70	0.989	0.055	1
Chloromethane	0.467	0.200	0.048	0.964	0.413	0.099	1
Freon-114	ND	0.050	0.012	ND	0.349	0.081	1
Vinyl chloride	ND	0.020	0.006	ND	0.051	0.015	1
1,3-Butadiene	0.028	0.020	0.007	0.062	0.044	0.016	1
Bromomethane	0.011	0.020	0.008	0.043	0.078	0.031	J 1
Chloroethane	1.24	0.100	0.017	3.27	0.264	0.045	1
Ethanol	166	5.00	0.157	313	9.42	0.296	1
Vinyl bromide	ND	0.200	0.023	ND	0.874	0.101	1
Acetone	42.7	1.00	0.366	101	2.38	0.869	1
Trichlorofluoromethane	0.185	0.050	0.011	1.04	0.281	0.064	1
Isopropanol	19.5	0.500	0.153	47.9	1.23	0.376	1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Methylene chloride	0.316	0.500	0.250	1.10	1.74	0.869	J 1
3-Chloropropene	ND	0.200	0.020	ND	0.626	0.063	1
Carbon disulfide	ND	0.200	0.063	ND	0.623	0.196	1
Freon-113	0.059	0.050	0.013	0.452	0.383	0.097	1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024	1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028	1
Methyl tert butyl ether	0.045	0.200	0.006	0.162	0.721	0.022	J 1
Vinyl acetate	ND	1.00	0.027	ND	3.52	0.095	1
2-Butanone	1.34	0.500	0.016	3.95	1.47	0.047	1



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-08	Date Collected:	07/20/18 14:41
Client ID:	DUP	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab							
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Ethyl Acetate	4.36	0.500	0.038	15.7	1.80	0.137	1
Chloroform	0.114	0.020	0.005	0.557	0.098	0.024	1
Tetrahydrofuran	0.390	0.500	0.037	1.15	1.47	0.109	J 1
1,2-Dichloroethane	0.021	0.020	0.005	0.085	0.081	0.020	1
n-Hexane	0.300	0.200	0.033	1.06	0.705	0.116	1
1,1,1-Trichloroethane	0.037	0.020	0.006	0.202	0.109	0.033	1
Benzene	0.137	0.100	0.019	0.438	0.319	0.061	1
Carbon tetrachloride	0.066	0.020	0.007	0.415	0.126	0.044	1
Cyclohexane	0.191	0.200	0.030	0.657	0.688	0.103	J 1
1,2-Dichloropropane	ND	0.020	0.008	ND	0.092	0.037	1
Bromodichloromethane	ND	0.020	0.008	ND	0.134	0.054	1
1,4-Dioxane	0.023	0.100	0.014	0.083	0.360	0.051	J 1
Trichloroethene	0.181	0.020	0.007	0.973	0.107	0.038	1
2,2,4-Trimethylpentane	ND	0.200	0.027	ND	0.934	0.126	1
Heptane	2.24	0.200	0.032	9.18	0.820	0.131	1
cis-1,3-Dichloropropene	ND	0.020	0.006	ND	0.091	0.027	1
4-Methyl-2-pentanone	0.254	0.500	0.005	1.04	2.05	0.021	J 1
trans-1,3-Dichloropropene	ND	0.020	0.008	ND	0.091	0.036	1
1,1,2-Trichloroethane	ND	0.020	0.004	ND	0.109	0.022	1
Toluene	2.93	0.050	0.006	11.0	0.188	0.023	1
2-Hexanone	0.112	0.200	0.030	0.459	0.820	0.123	J 1
Dibromochloromethane	ND	0.020	0.008	ND	0.170	0.068	1
1,2-Dibromoethane	ND	0.020	0.008	ND	0.154	0.062	1
Tetrachloroethene	0.048	0.020	0.008	0.325	0.136	0.054	1
1,1,1,2-Tetrachloroethane	ND	0.020	0.006	ND	0.137	0.041	1



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-08	Date Collected:	07/20/18 14:41
Client ID:	DUP	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab							
Chlorobenzene	ND	0.100	0.007	ND	0.461	0.032	1
Ethylbenzene	9.40	0.020	0.007	40.8	0.087	0.030	1
p/m-Xylene	62.8	0.040	0.007	273	0.174	0.030	1
Bromoform	ND	0.020	0.015	ND	0.207	0.155	1
Styrene	42.9	0.020	0.007	183	0.085	0.030	1
1,1,2,2-Tetrachloroethane	ND	0.020	0.007	ND	0.137	0.048	1
o-Xylene	20.9	0.020	0.008	90.8	0.087	0.035	1
4-Ethyltoluene	0.482	0.020	0.010	2.37	0.098	0.049	1
1,3,5-Trimethylbenzene	0.517	0.020	0.005	2.54	0.098	0.025	1
1,2,4-Trimethylbenzene	1.62	0.020	0.007	7.96	0.098	0.034	1
Benzyl chloride	ND	0.200	0.037	ND	1.04	0.192	1
1,3-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036	1
1,4-Dichlorobenzene	0.011	0.020	0.008	0.066	0.120	0.048	J 1
1,2-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036	1
1,2,4-Trichlorobenzene	ND	0.050	0.010	ND	0.371	0.074	1
Naphthalene	0.623	0.050	0.008	3.27	0.262	0.042	1
Hexachlorobutadiene	ND	0.050	0.007	ND	0.533	0.075	1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	116		60-140
bromochloromethane	117		60-140
chlorobenzene-d5	113		60-140



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Method Blank Analysis Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 07/26/18 15:44

Parameter	ppbV			ug/m3			Dilution Factor
	Results	RL	MDL	Results	RL	MDL	
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-08 Batch: WG1139926-4							
Propylene	ND	0.500	0.034	ND	0.861	0.059	1
Dichlorodifluoromethane	ND	0.200	0.011	ND	0.989	0.055	1
Chloromethane	ND	0.200	0.048	ND	0.413	0.099	1
Freon-114	ND	0.050	0.012	ND	0.349	0.081	1
Vinyl chloride	ND	0.020	0.006	ND	0.051	0.015	1
1,3-Butadiene	ND	0.020	0.007	ND	0.044	0.016	1
Bromomethane	ND	0.020	0.008	ND	0.078	0.031	1
Chloroethane	ND	0.100	0.017	ND	0.264	0.045	1
Ethanol	ND	5.00	0.157	ND	9.42	0.296	1
Vinyl bromide	ND	0.200	0.023	ND	0.874	0.101	1
Acetone	ND	1.00	0.366	ND	2.38	0.869	1
Trichlorofluoromethane	ND	0.050	0.011	ND	0.281	0.064	1
Isopropanol	ND	0.500	0.153	ND	1.23	0.376	1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Methylene chloride	ND	0.500	0.250	ND	1.74	0.869	1
3-Chloropropene	ND	0.200	0.020	ND	0.626	0.063	1
Carbon disulfide	ND	0.200	0.063	ND	0.623	0.196	1
Freon-113	ND	0.050	0.013	ND	0.383	0.097	1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024	1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028	1
Methyl tert butyl ether	ND	0.200	0.006	ND	0.721	0.022	1
Vinyl acetate	ND	1.00	0.027	ND	3.52	0.095	1
2-Butanone	0.019	0.500	0.016	0.056	1.47	0.047	J
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Ethyl Acetate	ND	0.500	0.038	ND	1.80	0.137	1



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Method Blank Analysis Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 07/26/18 15:44

Parameter	ppbV			ug/m3			Dilution Factor
	Results	RL	MDL	Results	RL	MDL	
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-08 Batch: WG1139926-4							
Chloroform	ND	0.020	0.005	ND	0.098	0.024	1
Tetrahydrofuran	ND	0.500	0.037	ND	1.47	0.109	1
1,2-Dichloroethane	ND	0.020	0.005	ND	0.081	0.020	1
n-Hexane	ND	0.200	0.033	ND	0.705	0.116	1
1,1,1-Trichloroethane	ND	0.020	0.006	ND	0.109	0.033	1
Benzene	ND	0.100	0.019	ND	0.319	0.061	1
Carbon tetrachloride	ND	0.020	0.007	ND	0.126	0.044	1
Cyclohexane	ND	0.200	0.030	ND	0.688	0.103	1
1,2-Dichloropropane	ND	0.020	0.008	ND	0.092	0.037	1
Bromodichloromethane	ND	0.020	0.008	ND	0.134	0.054	1
1,4-Dioxane	ND	0.100	0.014	ND	0.360	0.051	1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038	1
2,2,4-Trimethylpentane	ND	0.200	0.027	ND	0.934	0.126	1
Heptane	ND	0.200	0.032	ND	0.820	0.131	1
cis-1,3-Dichloropropene	ND	0.020	0.006	ND	0.091	0.027	1
4-Methyl-2-pentanone	ND	0.500	0.005	ND	2.05	0.021	1
trans-1,3-Dichloropropene	ND	0.020	0.008	ND	0.091	0.036	1
1,1,2-Trichloroethane	ND	0.020	0.004	ND	0.109	0.022	1
Toluene	ND	0.050	0.006	ND	0.188	0.023	1
2-Hexanone	ND	0.200	0.030	ND	0.820	0.123	1
Dibromochloromethane	ND	0.020	0.008	ND	0.170	0.068	1
1,2-Dibromoethane	ND	0.020	0.008	ND	0.154	0.062	1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054	1
1,1,1,2-Tetrachloroethane	ND	0.020	0.006	ND	0.137	0.041	1
Chlorobenzene	ND	0.100	0.007	ND	0.461	0.032	1



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 48,TO-15-SIM
Analytical Date: 07/26/18 15:44

Parameter	ppbV			ug/m3			Dilution Factor
	Results	RL	MDL	Results	RL	MDL	
Volatile Organics in Air by SIM - Mansfield Lab for sample(s): 01-08 Batch: WG1139926-4							
Ethylbenzene	ND	0.020	0.007	ND	0.087	0.030	1
p/m-Xylene	ND	0.040	0.007	ND	0.174	0.030	1
Bromoform	ND	0.020	0.015	ND	0.207	0.155	1
Styrene	ND	0.020	0.007	ND	0.085	0.030	1
1,1,2,2-Tetrachloroethane	ND	0.020	0.007	ND	0.137	0.048	1
o-Xylene	ND	0.020	0.008	ND	0.087	0.035	1
4-Ethyltoluene	ND	0.020	0.010	ND	0.098	0.049	1
1,3,5-Trimethylbenzene	ND	0.020	0.005	ND	0.098	0.025	1
1,2,4-Trimethylbenzene	ND	0.020	0.007	ND	0.098	0.034	1
Benzyl chloride	ND	0.200	0.037	ND	1.04	0.192	1
1,3-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036	1
1,4-Dichlorobenzene	ND	0.020	0.008	ND	0.120	0.048	1
1,2-Dichlorobenzene	0.011	0.020	0.006	0.066	0.120	0.036	J 1
1,2,4-Trichlorobenzene	0.022	0.050	0.010	0.163	0.371	0.074	J 1
Naphthalene	0.025	0.050	0.008	0.131	0.262	0.042	J 1
Hexachlorobutadiene	0.015	0.050	0.007	0.160	0.533	0.075	J 1



Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-08 Batch: WG1139926-3								
Propylene	121		-		70-130	-		25
Dichlorodifluoromethane	90		-		70-130	-		25
Chloromethane	96		-		70-130	-		25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	97		-		70-130	-		25
Vinyl chloride	96		-		70-130	-		25
1,3-Butadiene	106		-		70-130	-		25
Bromomethane	98		-		70-130	-		25
Chloroethane	93		-		70-130	-		25
Ethyl Alcohol	90		-		70-130	-		25
Vinyl bromide	98		-		70-130	-		25
Acetone	80		-		70-130	-		25
Trichlorofluoromethane	95		-		70-130	-		25
iso-Propyl Alcohol	82		-		70-130	-		25
Acrylonitrile	86		-		70-130	-		25
1,1-Dichloroethene	100		-		70-130	-		25
tert-Butyl Alcohol ¹	98		-		70-130	-		25
Methylene chloride	98		-		70-130	-		25
3-Chloropropene	115		-		70-130	-		25
Carbon disulfide	98		-		70-130	-		25
1,1,2-Trichloro-1,2,2-Trifluoroethane	105		-		70-130	-		25
trans-1,2-Dichloroethene	97		-		70-130	-		25
1,1-Dichloroethane	97		-		70-130	-		25
Methyl tert butyl ether	106		-		70-130	-		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-08 Batch: WG1139926-3								
Vinyl acetate	109		-		70-130	-		25
2-Butanone	108		-		70-130	-		25
cis-1,2-Dichloroethene	100		-		70-130	-		25
Ethyl Acetate	119		-		70-130	-		25
Chloroform	101		-		70-130	-		25
Tetrahydrofuran	99		-		70-130	-		25
1,2-Dichloroethane	101		-		70-130	-		25
n-Hexane	96		-		70-130	-		25
1,1,1-Trichloroethane	101		-		70-130	-		25
Benzene	91		-		70-130	-		25
Carbon tetrachloride	106		-		70-130	-		25
Cyclohexane	103		-		70-130	-		25
Dibromomethane ¹	82		-		70-130	-		25
1,2-Dichloropropane	94		-		70-130	-		25
Bromodichloromethane	105		-		70-130	-		25
1,4-Dioxane	109		-		70-130	-		25
Trichloroethene	103		-		70-130	-		25
2,2,4-Trimethylpentane	109		-		70-130	-		25
cis-1,3-Dichloropropene	105		-		70-130	-		25
4-Methyl-2-pentanone	118		-		70-130	-		25
trans-1,3-Dichloropropene	94		-		70-130	-		25
1,1,2-Trichloroethane	100		-		70-130	-		25
Toluene	100		-		70-130	-		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-08 Batch: WG1139926-3								
2-Hexanone	115		-		70-130	-		25
Dibromochloromethane	120		-		70-130	-		25
1,2-Dibromoethane	106		-		70-130	-		25
Tetrachloroethene	111		-		70-130	-		25
1,1,1,2-Tetrachloroethane	105		-		70-130	-		25
Chlorobenzene	103		-		70-130	-		25
Ethylbenzene	106		-		70-130	-		25
p/m-Xylene	109		-		70-130	-		25
Bromoform	125		-		70-130	-		25
Styrene	114		-		70-130	-		25
1,1,2,2-Tetrachloroethane	105		-		70-130	-		25
o-Xylene	113		-		70-130	-		25
1,2,3-Trichloropropane ¹	100		-		70-130	-		25
Isopropylbenzene	106		-		70-130	-		25
Bromobenzene ¹	96		-		70-130	-		25
4-Ethyltoluene	111		-		70-130	-		25
1,3,5-Trimethylbenzene	111		-		70-130	-		25
1,2,4-Trimethylbenzene	122		-		70-130	-		25
Benzyl chloride	117		-		70-130	-		25
1,3-Dichlorobenzene	121		-		70-130	-		25
1,4-Dichlorobenzene	120		-		70-130	-		25
sec-Butylbenzene	111		-		70-130	-		25
p-Isopropyltoluene	105		-		70-130	-		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-08 Batch: WG1139926-3								
1,2-Dichlorobenzene	121		-		70-130	-		25
n-Butylbenzene	122		-		70-130	-		25
1,2,4-Trichlorobenzene	146	Q	-		70-130	-		25
Naphthalene	123		-		70-130	-		25
1,2,3-Trichlorobenzene	147	Q	-		70-130	-		25
Hexachlorobutadiene	150	Q	-		70-130	-		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1139926-5 QC Sample: L1828020-03 Client ID: S-135E.3						
Propylene	0.220J	0.202J	ppbV	NC		25
Dichlorodifluoromethane	0.279	0.269	ppbV	4		25
Chloromethane	0.494	0.535	ppbV	8		25
Freon-114	0.012J	0.012J	ppbV	NC		25
Vinyl chloride	ND	ND	ppbV	NC		25
1,3-Butadiene	0.010J	0.009J	ppbV	NC		25
Bromomethane	0.013J	0.016J	ppbV	NC		25
Chloroethane	0.097J	0.102	ppbV	NC		25
Ethanol	10.0	11.2	ppbV	11		25
Vinyl bromide	ND	ND	ppbV	NC		25
Acetone	7.36	8.00	ppbV	8		25
Trichlorofluoromethane	0.180	0.194	ppbV	7		25
Isopropanol	4.35	4.69	ppbV	8		25
1,1-Dichloroethene	ND	ND	ppbV	NC		25
Methylene chloride	0.267J	0.278J	ppbV	NC		25
3-Chloropropene	ND	ND	ppbV	NC		25
Carbon disulfide	0.133J	0.140J	ppbV	NC		25
Freon-113	0.062	0.063	ppbV	2		25
trans-1,2-Dichloroethene	0.006J	ND	ppbV	NC		25
1,1-Dichloroethane	0.017J	0.018J	ppbV	NC		25
Methyl tert butyl ether	ND	ND	ppbV	NC		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1139926-5 QC Sample: L1828020-03 Client ID: S-135E.3						
Vinyl acetate	ND	ND	ppbV	NC		25
2-Butanone	0.519	0.516	ppbV	1		25
cis-1,2-Dichloroethene	ND	ND	ppbV	NC		25
Ethyl Acetate	0.139J	0.143J	ppbV	NC		25
Chloroform	0.072	0.072	ppbV	0		25
Tetrahydrofuran	0.742	0.731	ppbV	1		25
1,2-Dichloroethane	0.034	0.035	ppbV	3		25
n-Hexane	0.099J	0.097J	ppbV	NC		25
1,1,1-Trichloroethane	0.010J	0.009J	ppbV	NC		25
Benzene	0.076J	0.076J	ppbV	NC		25
Carbon tetrachloride	0.071	0.071	ppbV	0		25
Cyclohexane	0.041J	0.043J	ppbV	NC		25
1,2-Dichloropropane	ND	ND	ppbV	NC		25
Bromodichloromethane	ND	ND	ppbV	NC		25
1,4-Dioxane	0.046J	0.046J	ppbV	NC		25
Trichloroethene	ND	ND	ppbV	NC		25
2,2,4-Trimethylpentane	0.076J	0.078J	ppbV	NC		25
Heptane	0.061J	0.063J	ppbV	NC		25
cis-1,3-Dichloropropene	ND	ND	ppbV	NC		25
4-Methyl-2-pentanone	1.68	1.72	ppbV	2		25
trans-1,3-Dichloropropene	ND	ND	ppbV	NC		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1139926-5 QC Sample: L1828020-03 Client ID: S-135E.3						
1,1,2-Trichloroethane	ND	ND	ppbV	NC		25
Toluene	0.355	0.366	ppbV	3		25
2-Hexanone	ND	ND	ppbV	NC		25
Dibromochloromethane	ND	ND	ppbV	NC		25
1,2-Dibromoethane	ND	ND	ppbV	NC		25
Tetrachloroethene	0.016J	0.017J	ppbV	NC		25
1,1,1,2-Tetrachloroethane	ND	ND	ppbV	NC		25
Chlorobenzene	ND	ND	ppbV	NC		25
Ethylbenzene	0.091	0.097	ppbV	6		25
p/m-Xylene	1.31	1.33	ppbV	2		25
Bromoform	ND	ND	ppbV	NC		25
Styrene	0.488	0.513	ppbV	5		25
1,1,2,2-Tetrachloroethane	ND	ND	ppbV	NC		25
o-Xylene	0.140	0.152	ppbV	8		25
4-Ethyltoluene	0.018J	0.020	ppbV	NC		25
1,3,5-Trimethylbenzene	0.023	0.024	ppbV	4		25
1,2,4-Trimethylbenzene	0.068	0.073	ppbV	7		25
Benzyl chloride	ND	ND	ppbV	NC		25
1,3-Dichlorobenzene	ND	ND	ppbV	NC		25
1,4-Dichlorobenzene	ND	ND	ppbV	NC		25
1,2-Dichlorobenzene	ND	ND	ppbV	NC		25

Lab Duplicate Analysis
Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics in Air by SIM - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1139926-5 QC Sample: L1828020-03 Client ID: S-135E.3						
1,2,4-Trichlorobenzene	ND	ND	ppbV	NC		25
Naphthalene	0.214	0.281	ppbV	27	Q	25
Hexachlorobutadiene	ND	ND	ppbV	NC		25

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-01	Date Collected:	07/20/18 14:50
Client ID:	S-135E.1	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Matrix: Air
Analytical Method: 96,APH
Analytical Date: 07/26/18 19:45
Analyst: MB

Quality Control Information

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbons in Air - Mansfield Lab						
1,3-Butadiene	ND		ug/m3	0.50	0.50	1
Methyl tert butyl ether	ND		ug/m3	0.70	0.70	1
Benzene	ND		ug/m3	0.60	0.60	1
C5-C8 Aliphatics, Adjusted	20		ug/m3	10	10.	1
Toluene	1.6		ug/m3	0.90	0.90	1
Ethylbenzene	ND		ug/m3	0.90	0.90	1
p/m-Xylene	6.2		ug/m3	0.90	0.90	1
o-Xylene	ND		ug/m3	0.90	0.90	1
Naphthalene	1.5		ug/m3	1.1	1.1	1
C9-C12 Aliphatics, Adjusted	21		ug/m3	10	10.	1
C9-C10 Aromatics Total	ND		ug/m3	10	10.	1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	147		50-200
Bromochloromethane	143		50-200
Chlorobenzene-d5	133		50-200

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID: L1828020-02
Client ID: S-135E.2
Sample Location: BEVERLY, MA

Date Collected: 07/20/18 14:52
Date Received: 07/20/18
Field Prep: Not Specified

Sample Depth:

Matrix: Air
Analytical Method: 96,APH
Analytical Date: 07/26/18 20:18
Analyst: MB

Quality Control Information

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbons in Air - Mansfield Lab						
1,3-Butadiene	ND		ug/m3	0.50	0.50	1
Methyl tert butyl ether	ND		ug/m3	0.70	0.70	1
Benzene	ND		ug/m3	0.60	0.60	1
C5-C8 Aliphatics, Adjusted	14		ug/m3	10	10.	1
Toluene	1.4		ug/m3	0.90	0.90	1
Ethylbenzene	ND		ug/m3	0.90	0.90	1
p/m-Xylene	5.4		ug/m3	0.90	0.90	1
o-Xylene	ND		ug/m3	0.90	0.90	1
Naphthalene	ND		ug/m3	1.1	1.1	1
C9-C12 Aliphatics, Adjusted	21		ug/m3	10	10.	1
C9-C10 Aromatics Total	ND		ug/m3	10	10.	1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	127		50-200
Bromochloromethane	133		50-200
Chlorobenzene-d5	126		50-200

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID: L1828020-03
Client ID: S-135E.3
Sample Location: BEVERLY, MA

Date Collected: 07/20/18 14:54
Date Received: 07/20/18
Field Prep: Not Specified

Sample Depth:

Matrix: Air
Analytical Method: 96,APH
Analytical Date: 07/26/18 20:50
Analyst: MB

Quality Control Information

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbons in Air - Mansfield Lab						
1,3-Butadiene	ND		ug/m3	0.50	0.50	1
Methyl tert butyl ether	ND		ug/m3	0.70	0.70	1
Benzene	ND		ug/m3	0.60	0.60	1
C5-C8 Aliphatics, Adjusted	14		ug/m3	10	10.	1
Toluene	1.2		ug/m3	0.90	0.90	1
Ethylbenzene	ND		ug/m3	0.90	0.90	1
p/m-Xylene	5.1		ug/m3	0.90	0.90	1
o-Xylene	ND		ug/m3	0.90	0.90	1
Naphthalene	ND		ug/m3	1.1	1.1	1
C9-C12 Aliphatics, Adjusted	ND		ug/m3	10	10.	1
C9-C10 Aromatics Total	ND		ug/m3	10	10.	1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	106		50-200
Bromochloromethane	110		50-200
Chlorobenzene-d5	104		50-200

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID: L1828020-04
Client ID: S-140A.1
Sample Location: BEVERLY, MA

Date Collected: 07/20/18 14:37
Date Received: 07/20/18
Field Prep: Not Specified

Sample Depth:

Matrix: Air
Analytical Method: 96,APH
Analytical Date: 07/26/18 21:56
Analyst: MB

Quality Control Information

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbons in Air - Mansfield Lab						
1,3-Butadiene	ND		ug/m3	0.50	0.50	1
Methyl tert butyl ether	ND		ug/m3	0.70	0.70	1
Benzene	ND		ug/m3	0.60	0.60	1
C5-C8 Aliphatics, Adjusted	61		ug/m3	10	10.	1
Toluene	15		ug/m3	0.90	0.90	1
Ethylbenzene	9.6		ug/m3	0.90	0.90	1
p/m-Xylene	60		ug/m3	0.90	0.90	1
o-Xylene	21		ug/m3	0.90	0.90	1
Naphthalene	1.7		ug/m3	1.1	1.1	1
C9-C12 Aliphatics, Adjusted	740		ug/m3	10	10.	1
C9-C10 Aromatics Total	98		ug/m3	10	10.	1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	95		50-200
Bromochloromethane	94		50-200
Chlorobenzene-d5	96		50-200

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-05	Date Collected:	07/20/18 14:39
Client ID:	S-140A.2	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Matrix: Air
Analytical Method: 96,APH
Analytical Date: 07/26/18 22:28
Analyst: MB

Quality Control Information

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbons in Air - Mansfield Lab						
1,3-Butadiene	ND		ug/m3	0.50	0.50	1
Methyl tert butyl ether	ND		ug/m3	0.70	0.70	1
Benzene	ND		ug/m3	0.60	0.60	1
C5-C8 Aliphatics, Adjusted	110		ug/m3	10	10.	1
Toluene	20		ug/m3	0.90	0.90	1
Ethylbenzene	11		ug/m3	0.90	0.90	1
p/m-Xylene	70		ug/m3	0.90	0.90	1
o-Xylene	24		ug/m3	0.90	0.90	1
Naphthalene	2.3		ug/m3	1.1	1.1	1
C9-C12 Aliphatics, Adjusted	1000		ug/m3	10	10.	1
C9-C10 Aromatics Total	98		ug/m3	10	10.	1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	102		50-200
Bromochloromethane	105		50-200
Chlorobenzene-d5	106		50-200

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID:	L1828020-06	Date Collected:	07/20/18 14:43
Client ID:	S-140A.3	Date Received:	07/20/18
Sample Location:	BEVERLY, MA	Field Prep:	Not Specified

Sample Depth:

Matrix: Air
Analytical Method: 96,APH
Analytical Date: 07/26/18 23:01
Analyst: MB

Quality Control Information

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbons in Air - Mansfield Lab						
1,3-Butadiene	ND		ug/m3	0.50	0.50	1
Methyl tert butyl ether	ND		ug/m3	0.70	0.70	1
Benzene	ND		ug/m3	0.60	0.60	1
C5-C8 Aliphatics, Adjusted	26		ug/m3	10	10.	1
Toluene	13		ug/m3	0.90	0.90	1
Ethylbenzene	33		ug/m3	0.90	0.90	1
p/m-Xylene	230		ug/m3	0.90	0.90	1
o-Xylene	76		ug/m3	0.90	0.90	1
Naphthalene	3.0		ug/m3	1.1	1.1	1
C9-C12 Aliphatics, Adjusted	300		ug/m3	10	10.	1
C9-C10 Aromatics Total	62		ug/m3	10	10.	1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	120		50-200
Bromochloromethane	124		50-200
Chlorobenzene-d5	122		50-200

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID: L1828020-07
Client ID: S-140A.4
Sample Location: BEVERLY, MA

Date Collected: 07/20/18 14:42
Date Received: 07/20/18
Field Prep: Not Specified

Sample Depth:

Matrix: Air
Analytical Method: 96,APH
Analytical Date: 07/26/18 23:33
Analyst: MB

Quality Control Information

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbons in Air - Mansfield Lab						
1,3-Butadiene	ND		ug/m3	0.50	0.50	1
Methyl tert butyl ether	ND		ug/m3	0.70	0.70	1
Benzene	ND		ug/m3	0.60	0.60	1
C5-C8 Aliphatics, Adjusted	27		ug/m3	10	10.	1
Toluene	14		ug/m3	0.90	0.90	1
Ethylbenzene	34		ug/m3	0.90	0.90	1
p/m-Xylene	240		ug/m3	0.90	0.90	1
o-Xylene	80		ug/m3	0.90	0.90	1
Naphthalene	3.1		ug/m3	1.1	1.1	1
C9-C12 Aliphatics, Adjusted	260		ug/m3	10	10.	1
C9-C10 Aromatics Total	60		ug/m3	10	10.	1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	118		50-200
Bromochloromethane	117		50-200
Chlorobenzene-d5	118		50-200

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

SAMPLE RESULTS

Lab ID: L1828020-08
Client ID: DUP
Sample Location: BEVERLY, MA

Date Collected: 07/20/18 14:41
Date Received: 07/20/18
Field Prep: Not Specified

Sample Depth:

Matrix: Air
Analytical Method: 96,APH
Analytical Date: 07/27/18 00:06
Analyst: MB

Quality Control Information

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbons in Air - Mansfield Lab						
1,3-Butadiene	ND		ug/m3	0.50	0.50	1
Methyl tert butyl ether	ND		ug/m3	0.70	0.70	1
Benzene	ND		ug/m3	0.60	0.60	1
C5-C8 Aliphatics, Adjusted	ND		ug/m3	10	10.	1
Toluene	11		ug/m3	0.90	0.90	1
Ethylbenzene	36		ug/m3	0.90	0.90	1
p/m-Xylene	250		ug/m3	0.90	0.90	1
o-Xylene	82		ug/m3	0.90	0.90	1
Naphthalene	3.2		ug/m3	1.1	1.1	1
C9-C12 Aliphatics, Adjusted	280		ug/m3	10	10.	1
C9-C10 Aromatics Total	61		ug/m3	10	10.	1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	123		50-200
Bromochloromethane	122		50-200
Chlorobenzene-d5	122		50-200

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 96,APH
Analytical Date: 07/26/18 15:44
Analyst: MB

Parameter	Result	Qualifier	Units	RL	MDL
Petroleum Hydrocarbons in Air - Mansfield Lab for sample(s):	01-08		Batch:	WG1139924-4	
1,3-Butadiene	ND		ug/m3	0.50	0.50
Methyl tert butyl ether	ND		ug/m3	0.70	0.70
Benzene	ND		ug/m3	0.60	0.60
C5-C8 Aliphatics, Adjusted	ND		ug/m3	10	10.
Toluene	ND		ug/m3	0.90	0.90
Ethylbenzene	ND		ug/m3	0.90	0.90
p/m-Xylene	ND		ug/m3	0.90	0.90
o-Xylene	ND		ug/m3	0.90	0.90
Naphthalene	ND		ug/m3	1.1	1.1
C9-C12 Aliphatics, Adjusted	ND		ug/m3	10	10.
C9-C10 Aromatics Total	ND		ug/m3	10	10.

Lab Control Sample Analysis

Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Petroleum Hydrocarbons in Air - Mansfield Lab Associated sample(s): 01-08 Batch: WG1139924-3								
1,3-Butadiene	91		-		70-130	-		
Methyl tert butyl ether	90		-		70-130	-		
Benzene	98		-		70-130	-		
C5-C8 Aliphatics, Adjusted	86		-		70-130	-		
Toluene	95		-		70-130	-		
Ethylbenzene	98		-		70-130	-		
p/m-Xylene	103		-		70-130	-		
o-Xylene	105		-		70-130	-		
Naphthalene	130		-		50-150	-		
C9-C12 Aliphatics, Adjusted	106		-		70-130	-		
C9-C10 Aromatics Total	88		-		70-130	-		

Lab Duplicate Analysis
Batch Quality Control

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Petroleum Hydrocarbons in Air - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1139924-5 QC Sample: L1827474-01 Client ID: DUP Sample						
1,3-Butadiene	ND	ND	ug/m3	NC		30
Methyl tert butyl ether	ND	ND	ug/m3	NC		30
Benzene	0.83	0.86	ug/m3	4		30
C5-C8 Aliphatics, Adjusted	59	58	ug/m3	2		30
Toluene	29	31	ug/m3	7		30
Ethylbenzene	ND	ND	ug/m3	NC		30
p/m-Xylene	1.6	1.7	ug/m3	6		30
o-Xylene	ND	ND	ug/m3	NC		30
Naphthalene	ND	ND	ug/m3	NC		30
C9-C12 Aliphatics, Adjusted	21	18	ug/m3	15		30
C9-C10 Aromatics Total	ND	ND	ug/m3	NC		30

Project Name: CUMMINGS BEVERLY

Serial_No:07271815:55

Project Number: CUMMINGS BEVERLY

Lab Number: L1828020

Report Date: 07/27/18

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controller Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1828020-01	S-135E.1	0284	Flow 5	07/18/18	270285		-	-	-	Pass	3.3	3.8	14
L1828020-01	S-135E.1	1513	6.0L Can	07/18/18	270285	L1826168-01	Pass	-29.1	-2.0	-	-	-	-
L1828020-02	S-135E.2	0062	Flow 5	07/18/18	270285		-	-	-	Pass	3.3	3.8	14
L1828020-02	S-135E.2	2483	6.0L Can	07/18/18	270285	L1826168-01	Pass	-29.6	-4.4	-	-	-	-
L1828020-03	S-135E.3	0335	Flow 5	07/18/18	270285		-	-	-	Pass	3.3	4.0	19
L1828020-03	S-135E.3	2057	6.0L Can	07/18/18	270285	L1826168-01	Pass	-29.6	-4.7	-	-	-	-
L1828020-04	S-140A.1	0962	Flow 5	07/18/18	270285		-	-	-	Pass	3.3	3.9	17
L1828020-04	S-140A.1	2117	6.0L Can	07/18/18	270285	L1826681-01	Pass	-29.2	-4.4	-	-	-	-
L1828020-05	S-140A.2	0729	Flow 5	07/18/18	270285		-	-	-	Pass	3.3	3.8	14
L1828020-05	S-140A.2	618	6.0L Can	07/18/18	270285	L1826168-01	Pass	-29.6	-5.1	-	-	-	-
L1828020-06	S-140A.3	0234	Flow 5	07/18/18	270285		-	-	-	Pass	3.2	3.5	9
L1828020-06	S-140A.3	2259	6.0L Can	07/18/18	270285	L1826168-01	Pass	-29.8	-1.0	-	-	-	-
L1828020-07	S-140A.4	0950	Flow 4	07/18/18	270285		-	-	-	Pass	3.3	4.1	22
L1828020-07	S-140A.4	2113	6.0L Can	07/18/18	270285	L1826168-01	Pass	-29.8	-4.5	-	-	-	-
L1828020-08	DUP	0846	Flow 5	07/18/18	270285		-	-	-	Pass	3.3	5.2	45

Project Name: CUMMINGS BEVERLY

Serial_No:07271815:55

Project Number: CUMMINGS BEVERLY

Lab Number: L1828020

Report Date: 07/27/18

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controller Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1828020-08	DUP	976	6.0L Can	07/18/18	270285	L1826168-01	Pass	-29.8	-0.2	-	-	-	-

Project Name: BATCH CANISTER CERTIFICATION

Lab Number: L1826168

Project Number: CANISTER QC BAT

Report Date: 07/27/18

Air Canister Certification Results

Lab ID:	L1826168-01	Date Collected:	07/10/18 16:00
Client ID:	CAN 770 SHELF 43	Date Received:	07/11/18
Sample Location:		Field Prep:	Not Specified

Sample Depth:

Matrix: Air
 Analytical Method: 48,TO-15
 Analytical Date: 07/11/18 18:43
 Analyst: RY

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	RL	MDL		
Volatile Organics in Air - Mansfield Lab							
Chlorodifluoromethane	ND	0.200	0.032	ND	0.707	0.114	1
Propylene	ND	0.500	0.079	ND	0.861	0.135	1
Dichlorodifluoromethane	ND	0.200	0.038	ND	0.989	0.186	1
Chloromethane	ND	0.200	0.051	ND	0.413	0.105	1
Freon-114	ND	0.200	0.042	ND	1.40	0.291	1
Methanol	ND	5.00	1.84	ND	6.55	2.41	1
Vinyl chloride	ND	0.200	0.039	ND	0.511	0.100	1
1,3-Butadiene	ND	0.200	0.049	ND	0.442	0.108	1
Butane	ND	0.200	0.041	ND	0.475	0.098	1
Bromomethane	ND	0.200	0.047	ND	0.777	0.181	1
Chloroethane	ND	0.200	0.092	ND	0.528	0.244	1
Ethanol	ND	5.00	0.531	ND	9.42	1.00	1
Dichlorofluoromethane	ND	0.200	0.053	ND	0.842	0.223	1
Vinyl bromide	ND	0.200	0.057	ND	0.874	0.251	1
Acrolein	ND	0.500	0.063	ND	1.15	0.144	1
Acetone	ND	1.00	0.689	ND	2.38	1.64	1
Acetonitrile	ND	0.200	0.075	ND	0.336	0.125	1
Trichlorofluoromethane	ND	0.200	0.041	ND	1.12	0.233	1
Isopropanol	ND	0.500	0.478	ND	1.23	1.17	1
Acrylonitrile	ND	0.500	0.037	ND	1.09	0.080	1
Pentane	ND	0.200	0.042	ND	0.590	0.122	1
Ethyl ether	ND	0.200	0.069	ND	0.606	0.210	1
1,1-Dichloroethene	ND	0.200	0.028	ND	0.793	0.111	1
Tertiary butyl Alcohol	ND	0.500	0.055	ND	1.52	0.167	1



Project Name: BATCH CANISTER CERTIFICATION

Lab Number: L1826168

Project Number: CANISTER QC BAT

Report Date: 07/27/18

Air Canister Certification Results

Lab ID: L1826168-01 Date Collected: 07/10/18 16:00
 Client ID: CAN 770 SHELF 43 Date Received: 07/11/18
 Sample Location: Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Methylene chloride	ND	0.500	0.134	ND	1.74	0.466		1
3-Chloropropene	ND	0.200	0.035	ND	0.626	0.111		1
Carbon disulfide	ND	0.200	0.035	ND	0.623	0.110		1
Freon-113	ND	0.200	0.041	ND	1.53	0.313		1
trans-1,2-Dichloroethene	ND	0.200	0.064	ND	0.793	0.253		1
1,1-Dichloroethane	ND	0.200	0.048	ND	0.809	0.196		1
Methyl tert butyl ether	ND	0.200	0.075	ND	0.721	0.269		1
Vinyl acetate	ND	1.00	0.073	ND	3.52	0.256		1
2-Butanone	ND	0.500	0.064	ND	1.47	0.188		1
cis-1,2-Dichloroethene	ND	0.200	0.138	ND	0.793	0.547		1
Ethyl Acetate	ND	0.500	0.193	ND	1.80	0.696		1
Chloroform	ND	0.200	0.050	ND	0.977	0.245		1
Tetrahydrofuran	ND	0.500	0.083	ND	1.47	0.244		1
2,2-Dichloropropane	ND	0.200	0.056	ND	0.924	0.258		1
1,2-Dichloroethane	ND	0.200	0.044	ND	0.809	0.180		1
n-Hexane	ND	0.200	0.052	ND	0.705	0.183		1
Diisopropyl ether	ND	0.200	0.098	ND	0.836	0.409		1
tert-Butyl Ethyl Ether	ND	0.200	0.066	ND	0.836	0.274		1
1,1,1-Trichloroethane	ND	0.200	0.037	ND	1.09	0.201		1
1,1-Dichloropropene	ND	0.200	0.061	ND	0.908	0.276		1
Benzene	ND	0.200	0.054	ND	0.639	0.173		1
Carbon tetrachloride	ND	0.200	0.049	ND	1.26	0.310		1
Cyclohexane	ND	0.200	0.050	ND	0.688	0.170		1
tert-Amyl Methyl Ether	ND	0.200	0.073	ND	0.836	0.306		1
Dibromomethane	ND	0.200	0.050	ND	1.42	0.358		1
1,2-Dichloropropane	ND	0.200	0.065	ND	0.924	0.301		1
Bromodichloromethane	ND	0.200	0.043	ND	1.34	0.285		1



Project Name: BATCH CANISTER CERTIFICATION

Lab Number: L1826168

Project Number: CANISTER QC BAT

Report Date: 07/27/18

Air Canister Certification Results

Lab ID: L1826168-01 Date Collected: 07/10/18 16:00
 Client ID: CAN 770 SHELF 43 Date Received: 07/11/18
 Sample Location: Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
1,4-Dioxane	ND	0.200	0.106	ND	0.721	0.382		1
Trichloroethene	ND	0.200	0.054	ND	1.07	0.290		1
2,2,4-Trimethylpentane	ND	0.200	0.049	ND	0.934	0.231		1
Methyl Methacrylate	ND	0.500	0.080	ND	2.05	0.326		1
Heptane	ND	0.200	0.070	ND	0.820	0.288		1
cis-1,3-Dichloropropene	ND	0.200	0.062	ND	0.908	0.282		1
4-Methyl-2-pentanone	ND	0.500	0.065	ND	2.05	0.266		1
trans-1,3-Dichloropropene	ND	0.200	0.064	ND	0.908	0.290		1
1,1,2-Trichloroethane	ND	0.200	0.073	ND	1.09	0.396		1
Toluene	ND	0.200	0.054	ND	0.754	0.203		1
1,3-Dichloropropane	ND	0.200	0.106	ND	0.924	0.490		1
2-Hexanone	ND	0.200	0.087	ND	0.820	0.357		1
Dibromochloromethane	ND	0.200	0.066	ND	1.70	0.560		1
1,2-Dibromoethane	ND	0.200	0.055	ND	1.54	0.421		1
Butyl acetate	ND	0.500	0.166	ND	2.38	0.789		1
Octane	ND	0.200	0.072	ND	0.934	0.334		1
Tetrachloroethene	ND	0.200	0.066	ND	1.36	0.450		1
1,1,1,2-Tetrachloroethane	ND	0.200	0.065	ND	1.37	0.446		1
Chlorobenzene	ND	0.200	0.058	ND	0.921	0.267		1
Ethylbenzene	ND	0.200	0.057	ND	0.869	0.248		1
p/m-Xylene	ND	0.400	0.125	ND	1.74	0.543		1
Bromoform	ND	0.200	0.055	ND	2.07	0.566		1
Styrene	ND	0.200	0.064	ND	0.852	0.272		1
1,1,2,2-Tetrachloroethane	ND	0.200	0.057	ND	1.37	0.391		1
o-Xylene	ND	0.200	0.069	ND	0.869	0.299		1
1,2,3-Trichloropropane	ND	0.200	0.048	ND	1.21	0.288		1
Nonane	ND	0.200	0.069	ND	1.05	0.363		1



Project Name: BATCH CANISTER CERTIFICATION

Lab Number: L1826168

Project Number: CANISTER QC BAT

Report Date: 07/27/18

Air Canister Certification Results

Lab ID: L1826168-01 Date Collected: 07/10/18 16:00
 Client ID: CAN 770 SHELF 43 Date Received: 07/11/18
 Sample Location: Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Isopropylbenzene	ND	0.200	0.064	ND	0.983	0.313		1
Bromobenzene	ND	0.200	0.064	ND	0.793	0.253		1
2-Chlorotoluene	ND	0.200	0.064	ND	1.04	0.331		1
n-Propylbenzene	ND	0.200	0.062	ND	0.983	0.307		1
4-Chlorotoluene	ND	0.200	0.070	ND	1.04	0.363		1
4-Ethyltoluene	ND	0.200	0.055	ND	0.983	0.272		1
1,3,5-Trimethylbenzene	ND	0.200	0.062	ND	0.983	0.307		1
tert-Butylbenzene	ND	0.200	0.064	ND	1.10	0.353		1
1,2,4-Trimethylbenzene	ND	0.200	0.059	ND	0.983	0.289		1
Decane	ND	0.200	0.064	ND	1.16	0.372		1
Benzyl chloride	ND	0.200	0.051	ND	1.04	0.265		1
1,3-Dichlorobenzene	ND	0.200	0.071	ND	1.20	0.427		1
1,4-Dichlorobenzene	ND	0.200	0.075	ND	1.20	0.448		1
sec-Butylbenzene	ND	0.200	0.060	ND	1.10	0.330		1
p-Isopropyltoluene	ND	0.200	0.081	ND	1.10	0.444		1
1,2-Dichlorobenzene	ND	0.200	0.071	ND	1.20	0.426		1
n-Butylbenzene	ND	0.200	0.062	ND	1.10	0.341		1
1,2-Dibromo-3-chloropropane	ND	0.200	0.038	ND	1.93	0.362		1
Undecane	ND	0.200	0.069	ND	1.28	0.444		1
Dodecane	ND	0.200	0.093	ND	1.39	0.650		1
1,2,4-Trichlorobenzene	ND	0.200	0.051	ND	1.48	0.375		1
Naphthalene	ND	0.200	0.083	ND	1.05	0.437		1
1,2,3-Trichlorobenzene	ND	0.200	0.064	ND	1.48	0.475		1
Hexachlorobutadiene	ND	0.200	0.062	ND	2.13	0.661		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Serial_No:07271815:55

Lab Number: L1826168
Report Date: 07/27/18

Air Canister Certification Results

Lab ID: L1826168-01 Date Collected: 07/10/18 16:00
Client ID: CAN 770 SHELF 43 Date Received: 07/11/18
Sample Location: Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Dilution Factor
	Results	RL	MDL	Results	RL	MDL	
Volatile Organics in Air - Mansfield Lab							

Tentatively Identified Compounds

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Units	RDL	Dilution Factor
1,4-Difluorobenzene	90			60-140	
Bromochloromethane	94			60-140	
chlorobenzene-d5	92			60-140	

Project Name: BATCH CANISTER CERTIFICATION

Lab Number: L1826168

Project Number: CANISTER QC BAT

Report Date: 07/27/18

Air Canister Certification Results

Lab ID:	L1826168-01	Date Collected:	07/10/18 16:00
Client ID:	CAN 770 SHELF 43	Date Received:	07/11/18
Sample Location:		Field Prep:	Not Specified

Sample Depth:

Matrix: Air
 Analytical Method: 48,TO-15-SIM
 Analytical Date: 07/11/18 19:22
 Analyst: RY

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab							
Dichlorodifluoromethane	ND	0.200	0.011	ND	0.989	0.055	1
Chloromethane	ND	0.200	0.048	ND	0.413	0.099	1
Freon-114	ND	0.050	0.012	ND	0.349	0.081	1
Vinyl chloride	ND	0.020	0.006	ND	0.051	0.015	1
1,3-Butadiene	ND	0.020	0.007	ND	0.044	0.016	1
Bromomethane	ND	0.020	0.008	ND	0.078	0.031	1
Chloroethane	ND	0.100	0.017	ND	0.264	0.045	1
Acetone	ND	1.00	0.366	ND	2.38	0.869	1
Trichlorofluoromethane	ND	0.050	0.011	ND	0.281	0.064	1
Acrylonitrile	ND	0.500	0.025	ND	1.09	0.054	1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Methylene chloride	ND	0.500	0.250	ND	1.74	0.869	1
Freon-113	ND	0.050	0.013	ND	0.383	0.097	1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024	1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028	1
Methyl tert butyl ether	ND	0.200	0.006	ND	0.721	0.022	1
2-Butanone	ND	0.500	0.016	ND	1.47	0.047	1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Chloroform	ND	0.020	0.005	ND	0.098	0.024	1
1,2-Dichloroethane	ND	0.020	0.005	ND	0.081	0.020	1
1,1,1-Trichloroethane	ND	0.020	0.006	ND	0.109	0.033	1
Benzene	ND	0.100	0.019	ND	0.319	0.061	1
Carbon tetrachloride	ND	0.020	0.007	ND	0.126	0.044	1
1,2-Dichloropropane	ND	0.020	0.008	ND	0.092	0.037	1



Project Name: BATCH CANISTER CERTIFICATION

Lab Number: L1826168

Project Number: CANISTER QC BAT

Report Date: 07/27/18

Air Canister Certification Results

Lab ID: L1826168-01 Date Collected: 07/10/18 16:00
 Client ID: CAN 770 SHELF 43 Date Received: 07/11/18
 Sample Location: Field Prep: Not Specified

Sample Depth:

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	Results	RL		
Volatile Organics in Air by SIM - Mansfield Lab							
Bromodichloromethane	ND	0.020	0.008	ND	0.134	0.054	1
1,4-Dioxane	ND	0.100	0.014	ND	0.360	0.051	1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038	1
cis-1,3-Dichloropropene	ND	0.020	0.006	ND	0.091	0.027	1
4-Methyl-2-pentanone	ND	0.500	0.005	ND	2.05	0.021	1
trans-1,3-Dichloropropene	ND	0.020	0.008	ND	0.091	0.036	1
1,1,2-Trichloroethane	ND	0.020	0.004	ND	0.109	0.022	1
Toluene	ND	0.050	0.006	ND	0.188	0.023	1
Dibromochloromethane	ND	0.020	0.008	ND	0.170	0.068	1
1,2-Dibromoethane	ND	0.020	0.008	ND	0.154	0.062	1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054	1
1,1,1,2-Tetrachloroethane	ND	0.020	0.006	ND	0.137	0.041	1
Chlorobenzene	ND	0.100	0.007	ND	0.461	0.032	1
Ethylbenzene	ND	0.020	0.007	ND	0.087	0.030	1
p/m-Xylene	ND	0.040	0.007	ND	0.174	0.030	1
Bromoform	ND	0.020	0.015	ND	0.207	0.155	1
Styrene	ND	0.020	0.007	ND	0.085	0.030	1
1,1,2,2-Tetrachloroethane	ND	0.020	0.007	ND	0.137	0.048	1
o-Xylene	ND	0.020	0.008	ND	0.087	0.035	1
Isopropylbenzene	ND	0.200	0.007	ND	0.983	0.034	1
4-Ethyltoluene	ND	0.020	0.010	ND	0.098	0.049	1
1,3,5-Trimethylbenzene	ND	0.020	0.005	ND	0.098	0.025	1
1,2,4-Trimethylbenzene	ND	0.020	0.007	ND	0.098	0.034	1
Benzyl chloride	ND	0.200	0.037	ND	1.04	0.192	1
1,3-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036	1
1,4-Dichlorobenzene	ND	0.020	0.008	ND	0.120	0.048	1
sec-Butylbenzene	ND	0.200	0.008	ND	1.10	0.044	1



Project Name: BATCH CANISTER CERTIFICATION

Lab Number: L1826168

Project Number: CANISTER QC BAT

Report Date: 07/27/18

Air Canister Certification Results

Lab ID: L1826168-01 Date Collected: 07/10/18 16:00
 Client ID: CAN 770 SHELF 43 Date Received: 07/11/18
 Sample Location: Field Prep: Not Specified

Sample Depth:

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	Results	RL		
Volatile Organics in Air by SIM - Mansfield Lab							
p-Isopropyltoluene	ND	0.200	0.007	ND	1.10	0.038	1
1,2-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036	1
n-Butylbenzene	ND	0.200	0.008	ND	1.10	0.044	1
1,2,4-Trichlorobenzene	ND	0.050	0.010	ND	0.371	0.074	1
Naphthalene	ND	0.050	0.008	ND	0.262	0.042	1
1,2,3-Trichlorobenzene	ND	0.050	0.019	ND	0.371	0.141	1
Hexachlorobutadiene	ND	0.050	0.007	ND	0.533	0.075	1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	85		60-140
bromochloromethane	83		60-140
chlorobenzene-d5	82		60-140

Project Name: BATCH CANISTER CERTIFICATION

Lab Number: L1826681

Project Number: CANISTER QC BAT

Report Date: 07/27/18

Air Canister Certification Results

Lab ID:	L1826681-01	Date Collected:	07/12/18 16:00
Client ID:	CAN 2099 SHELF 49	Date Received:	07/13/18
Sample Location:		Field Prep:	Not Specified

Sample Depth:

Matrix: Air
 Analytical Method: 48,TO-15
 Analytical Date: 07/13/18 16:11
 Analyst: RY

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Chlorodifluoromethane	ND	0.200	0.032	ND	0.707	0.114		1
Propylene	ND	0.500	0.079	ND	0.861	0.135		1
Propane	ND	0.500	0.171	ND	0.902	0.308		1
Dichlorodifluoromethane	ND	0.200	0.038	ND	0.989	0.186		1
Chloromethane	ND	0.200	0.051	ND	0.413	0.105		1
Freon-114	ND	0.200	0.042	ND	1.40	0.291		1
Methanol	ND	5.00	1.84	ND	6.55	2.41		1
Vinyl chloride	ND	0.200	0.039	ND	0.511	0.100		1
1,3-Butadiene	ND	0.200	0.049	ND	0.442	0.108		1
Butane	ND	0.200	0.041	ND	0.475	0.098		1
Bromomethane	ND	0.200	0.047	ND	0.777	0.181		1
Chloroethane	ND	0.200	0.092	ND	0.528	0.244		1
Ethanol	ND	5.00	0.531	ND	9.42	1.00		1
Dichlorofluoromethane	ND	0.200	0.053	ND	0.842	0.223		1
Vinyl bromide	ND	0.200	0.057	ND	0.874	0.251		1
Acrolein	ND	0.500	0.063	ND	1.15	0.144		1
Acetone	ND	1.00	0.689	ND	2.38	1.64		1
Acetonitrile	ND	0.200	0.075	ND	0.336	0.125		1
Trichlorofluoromethane	ND	0.200	0.041	ND	1.12	0.233		1
Isopropanol	ND	0.500	0.478	ND	1.23	1.17		1
Acrylonitrile	ND	0.500	0.037	ND	1.09	0.080		1
Pentane	ND	0.200	0.042	ND	0.590	0.122		1
Ethyl ether	ND	0.200	0.069	ND	0.606	0.210		1
1,1-Dichloroethene	ND	0.200	0.028	ND	0.793	0.111		1



Project Name: BATCH CANISTER CERTIFICATION

Lab Number: L1826681

Project Number: CANISTER QC BAT

Report Date: 07/27/18

Air Canister Certification Results

Lab ID: L1826681-01 Date Collected: 07/12/18 16:00
 Client ID: CAN 2099 SHELF 49 Date Received: 07/13/18
 Sample Location: Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Tertiary butyl Alcohol	ND	0.500	0.055	ND	1.52	0.167		1
Methylene chloride	ND	0.500	0.134	ND	1.74	0.466		1
3-Chloropropene	ND	0.200	0.035	ND	0.626	0.111		1
Carbon disulfide	ND	0.200	0.035	ND	0.623	0.110		1
Freon-113	ND	0.200	0.041	ND	1.53	0.313		1
trans-1,2-Dichloroethene	ND	0.200	0.064	ND	0.793	0.253		1
1,1-Dichloroethane	ND	0.200	0.048	ND	0.809	0.196		1
Methyl tert butyl ether	ND	0.200	0.075	ND	0.721	0.269		1
Vinyl acetate	ND	1.00	0.073	ND	3.52	0.256		1
2-Butanone	ND	0.500	0.064	ND	1.47	0.188		1
cis-1,2-Dichloroethene	ND	0.200	0.138	ND	0.793	0.547		1
Ethyl Acetate	ND	0.500	0.193	ND	1.80	0.696		1
Chloroform	ND	0.200	0.050	ND	0.977	0.245		1
Tetrahydrofuran	ND	0.500	0.083	ND	1.47	0.244		1
2,2-Dichloropropane	ND	0.200	0.056	ND	0.924	0.258		1
1,2-Dichloroethane	ND	0.200	0.044	ND	0.809	0.180		1
n-Hexane	ND	0.200	0.052	ND	0.705	0.183		1
Diisopropyl ether	ND	0.200	0.098	ND	0.836	0.409		1
tert-Butyl Ethyl Ether	ND	0.200	0.066	ND	0.836	0.274		1
1,1,1-Trichloroethane	ND	0.200	0.037	ND	1.09	0.201		1
1,1-Dichloropropene	ND	0.200	0.061	ND	0.908	0.276		1
Benzene	ND	0.200	0.054	ND	0.639	0.173		1
Carbon tetrachloride	ND	0.200	0.049	ND	1.26	0.310		1
Cyclohexane	ND	0.200	0.050	ND	0.688	0.170		1
tert-Amyl Methyl Ether	ND	0.200	0.073	ND	0.836	0.306		1
Dibromomethane	ND	0.200	0.050	ND	1.42	0.358		1
1,2-Dichloropropane	ND	0.200	0.065	ND	0.924	0.301		1



Project Name: BATCH CANISTER CERTIFICATION

Lab Number: L1826681

Project Number: CANISTER QC BAT

Report Date: 07/27/18

Air Canister Certification Results

Lab ID: L1826681-01 Date Collected: 07/12/18 16:00
 Client ID: CAN 2099 SHELF 49 Date Received: 07/13/18
 Sample Location: Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Bromodichloromethane	ND	0.200	0.043	ND	1.34	0.285		1
1,4-Dioxane	ND	0.200	0.106	ND	0.721	0.382		1
Trichloroethene	ND	0.200	0.054	ND	1.07	0.290		1
2,2,4-Trimethylpentane	ND	0.200	0.049	ND	0.934	0.231		1
Methyl Methacrylate	ND	0.500	0.080	ND	2.05	0.326		1
Heptane	ND	0.200	0.070	ND	0.820	0.288		1
cis-1,3-Dichloropropene	ND	0.200	0.062	ND	0.908	0.282		1
4-Methyl-2-pentanone	ND	0.500	0.065	ND	2.05	0.266		1
trans-1,3-Dichloropropene	ND	0.200	0.064	ND	0.908	0.290		1
1,1,2-Trichloroethane	ND	0.200	0.073	ND	1.09	0.396		1
Toluene	ND	0.200	0.054	ND	0.754	0.203		1
1,3-Dichloropropane	ND	0.200	0.106	ND	0.924	0.490		1
2-Hexanone	ND	0.200	0.087	ND	0.820	0.357		1
Dibromochloromethane	ND	0.200	0.066	ND	1.70	0.560		1
1,2-Dibromoethane	ND	0.200	0.055	ND	1.54	0.421		1
Butyl acetate	ND	0.500	0.166	ND	2.38	0.789		1
Octane	ND	0.200	0.072	ND	0.934	0.334		1
Tetrachloroethene	ND	0.200	0.066	ND	1.36	0.450		1
1,1,1,2-Tetrachloroethane	ND	0.200	0.065	ND	1.37	0.446		1
Chlorobenzene	ND	0.200	0.058	ND	0.921	0.267		1
Ethylbenzene	ND	0.200	0.057	ND	0.869	0.248		1
p/m-Xylene	ND	0.400	0.125	ND	1.74	0.543		1
Bromoform	ND	0.200	0.055	ND	2.07	0.566		1
Styrene	ND	0.200	0.064	ND	0.852	0.272		1
1,1,2,2-Tetrachloroethane	ND	0.200	0.057	ND	1.37	0.391		1
o-Xylene	ND	0.200	0.069	ND	0.869	0.299		1
1,2,3-Trichloropropane	ND	0.200	0.048	ND	1.21	0.288		1



Project Name: BATCH CANISTER CERTIFICATION

Lab Number: L1826681

Project Number: CANISTER QC BAT

Report Date: 07/27/18

Air Canister Certification Results

Lab ID: L1826681-01 Date Collected: 07/12/18 16:00
 Client ID: CAN 2099 SHELF 49 Date Received: 07/13/18
 Sample Location: Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Qualifier	Dilution Factor
	Results	RL	MDL	Results	RL	MDL		
Volatile Organics in Air - Mansfield Lab								
Nonane	ND	0.200	0.069	ND	1.05	0.363		1
Isopropylbenzene	ND	0.200	0.064	ND	0.983	0.313		1
Bromobenzene	ND	0.200	0.064	ND	0.793	0.253		1
2-Chlorotoluene	ND	0.200	0.064	ND	1.04	0.331		1
n-Propylbenzene	ND	0.200	0.062	ND	0.983	0.307		1
4-Chlorotoluene	ND	0.200	0.070	ND	1.04	0.363		1
4-Ethyltoluene	ND	0.200	0.055	ND	0.983	0.272		1
1,3,5-Trimethylbenzene	ND	0.200	0.062	ND	0.983	0.307		1
tert-Butylbenzene	ND	0.200	0.064	ND	1.10	0.353		1
1,2,4-Trimethylbenzene	ND	0.200	0.059	ND	0.983	0.289		1
Decane	ND	0.200	0.064	ND	1.16	0.372		1
Benzyl chloride	ND	0.200	0.051	ND	1.04	0.265		1
1,3-Dichlorobenzene	ND	0.200	0.071	ND	1.20	0.427		1
1,4-Dichlorobenzene	ND	0.200	0.075	ND	1.20	0.448		1
sec-Butylbenzene	ND	0.200	0.060	ND	1.10	0.330		1
p-Isopropyltoluene	ND	0.200	0.081	ND	1.10	0.444		1
1,2-Dichlorobenzene	ND	0.200	0.071	ND	1.20	0.426		1
n-Butylbenzene	ND	0.200	0.062	ND	1.10	0.341		1
1,2-Dibromo-3-chloropropane	ND	0.200	0.038	ND	1.93	0.362		1
Undecane	ND	0.200	0.069	ND	1.28	0.444		1
Dodecane	ND	0.200	0.093	ND	1.39	0.650		1
1,2,4-Trichlorobenzene	ND	0.200	0.051	ND	1.48	0.375		1
Naphthalene	ND	0.200	0.083	ND	1.05	0.437		1
1,2,3-Trichlorobenzene	ND	0.200	0.064	ND	1.48	0.475		1
Hexachlorobutadiene	ND	0.200	0.062	ND	2.13	0.661		1



Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Serial_No:07271815:55

Lab Number: L1826681
Report Date: 07/27/18

Air Canister Certification Results

Lab ID: L1826681-01 Date Collected: 07/12/18 16:00
Client ID: CAN 2099 SHELF 49 Date Received: 07/13/18
Sample Location: Field Prep: Not Specified

Sample Depth:

Parameter	ppbV			ug/m3			Dilution Factor
	Results	RL	MDL	Results	RL	MDL	
Volatile Organics in Air - Mansfield Lab							

Tentatively Identified Compounds

No Tentatively Identified Compounds

Internal Standard	% Recovery	Qualifier	Units	RDL	Dilution Factor
1,4-Difluorobenzene	89			60-140	
Bromochloromethane	91			60-140	
chlorobenzene-d5	92			60-140	

Project Name: BATCH CANISTER CERTIFICATION

Lab Number: L1826681

Project Number: CANISTER QC BAT

Report Date: 07/27/18

Air Canister Certification Results

Lab ID:	L1826681-01	Date Collected:	07/12/18 16:00
Client ID:	CAN 2099 SHELF 49	Date Received:	07/13/18
Sample Location:		Field Prep:	Not Specified

Sample Depth:

Matrix: Air
 Analytical Method: 48,TO-15-SIM
 Analytical Date: 07/13/18 20:28
 Analyst: RY

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab							
Dichlorodifluoromethane	ND	0.200	0.011	ND	0.989	0.055	1
Chloromethane	ND	0.200	0.048	ND	0.413	0.099	1
Freon-114	ND	0.050	0.012	ND	0.349	0.081	1
Vinyl chloride	ND	0.020	0.006	ND	0.051	0.015	1
1,3-Butadiene	ND	0.020	0.007	ND	0.044	0.016	1
Bromomethane	ND	0.020	0.008	ND	0.078	0.031	1
Chloroethane	ND	0.100	0.017	ND	0.264	0.045	1
Acetone	ND	1.00	0.366	ND	2.38	0.869	1
Trichlorofluoromethane	ND	0.050	0.011	ND	0.281	0.064	1
Acrylonitrile	ND	0.500	0.025	ND	1.09	0.054	1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Methylene chloride	ND	0.500	0.250	ND	1.74	0.869	1
Freon-113	ND	0.050	0.013	ND	0.383	0.097	1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024	1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028	1
Methyl tert butyl ether	ND	0.200	0.006	ND	0.721	0.022	1
2-Butanone	ND	0.500	0.016	ND	1.47	0.047	1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028	1
Chloroform	ND	0.020	0.005	ND	0.098	0.024	1
1,2-Dichloroethane	ND	0.020	0.005	ND	0.081	0.020	1
1,1,1-Trichloroethane	ND	0.020	0.006	ND	0.109	0.033	1
Benzene	ND	0.100	0.019	ND	0.319	0.061	1
Carbon tetrachloride	ND	0.020	0.007	ND	0.126	0.044	1
1,2-Dichloropropane	ND	0.020	0.008	ND	0.092	0.037	1



Project Name: BATCH CANISTER CERTIFICATION

Lab Number: L1826681

Project Number: CANISTER QC BAT

Report Date: 07/27/18

Air Canister Certification Results

Lab ID: L1826681-01 Date Collected: 07/12/18 16:00
 Client ID: CAN 2099 SHELF 49 Date Received: 07/13/18
 Sample Location: Field Prep: Not Specified

Sample Depth:

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	RL	MDL		
Volatile Organics in Air by SIM - Mansfield Lab							
Bromodichloromethane	ND	0.020	0.008	ND	0.134	0.054	1
1,4-Dioxane	ND	0.100	0.014	ND	0.360	0.051	1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038	1
cis-1,3-Dichloropropene	ND	0.020	0.006	ND	0.091	0.027	1
4-Methyl-2-pentanone	ND	0.500	0.005	ND	2.05	0.021	1
trans-1,3-Dichloropropene	ND	0.020	0.008	ND	0.091	0.036	1
1,1,2-Trichloroethane	ND	0.020	0.004	ND	0.109	0.022	1
Toluene	ND	0.050	0.006	ND	0.188	0.023	1
Dibromochloromethane	ND	0.020	0.008	ND	0.170	0.068	1
1,2-Dibromoethane	ND	0.020	0.008	ND	0.154	0.062	1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054	1
1,1,1,2-Tetrachloroethane	ND	0.020	0.006	ND	0.137	0.041	1
Chlorobenzene	ND	0.100	0.007	ND	0.461	0.032	1
Ethylbenzene	ND	0.020	0.007	ND	0.087	0.030	1
p/m-Xylene	ND	0.040	0.007	ND	0.174	0.030	1
Bromoform	ND	0.020	0.015	ND	0.207	0.155	1
Styrene	ND	0.020	0.007	ND	0.085	0.030	1
1,1,2,2-Tetrachloroethane	ND	0.020	0.007	ND	0.137	0.048	1
o-Xylene	ND	0.020	0.008	ND	0.087	0.035	1
Isopropylbenzene	ND	0.200	0.007	ND	0.983	0.034	1
4-Ethyltoluene	ND	0.020	0.010	ND	0.098	0.049	1
1,3,5-Trimethylbenzene	ND	0.020	0.005	ND	0.098	0.025	1
1,2,4-Trimethylbenzene	ND	0.020	0.007	ND	0.098	0.034	1
Benzyl chloride	ND	0.200	0.037	ND	1.04	0.192	1
1,3-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036	1
1,4-Dichlorobenzene	ND	0.020	0.008	ND	0.120	0.048	1
sec-Butylbenzene	ND	0.200	0.008	ND	1.10	0.044	1



Project Name: BATCH CANISTER CERTIFICATION

Lab Number: L1826681

Project Number: CANISTER QC BAT

Report Date: 07/27/18

Air Canister Certification Results

Lab ID: L1826681-01 Date Collected: 07/12/18 16:00
 Client ID: CAN 2099 SHELF 49 Date Received: 07/13/18
 Sample Location: Field Prep: Not Specified

Sample Depth:

Parameter	Results	ppbV		ug/m3		Qualifier	Dilution Factor
		RL	MDL	Results	RL		
Volatile Organics in Air by SIM - Mansfield Lab							
p-Isopropyltoluene	ND	0.200	0.007	ND	1.10	0.038	1
1,2-Dichlorobenzene	ND	0.020	0.006	ND	0.120	0.036	1
n-Butylbenzene	ND	0.200	0.008	ND	1.10	0.044	1
1,2,4-Trichlorobenzene	ND	0.050	0.010	ND	0.371	0.074	1
Naphthalene	ND	0.050	0.008	ND	0.262	0.042	1
1,2,3-Trichlorobenzene	ND	0.050	0.019	ND	0.371	0.141	1
Hexachlorobutadiene	ND	0.050	0.007	ND	0.533	0.075	1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-difluorobenzene	88		60-140
bromochloromethane	91		60-140
chlorobenzene-d5	85		60-140

AIR Petro Can Certification

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1826168
Report Date: 07/27/18

AIR CAN CERTIFICATION RESULTS

Lab ID:	L1826168-01	Date Collected:	07/10/18 16:00
Client ID:	CAN 770 SHELF 43	Date Received:	07/11/18
Sample Location:	Not Specified	Field Prep:	Not Specified
Matrix:	Air		
Analytical Method:	96,APH		
Analytical Date:	07/11/18 19:22		
Analyst:	RY		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbons in Air						
1,3-Butadiene	ND		ug/m3	0.50	0.50	1
Methyl tert butyl ether	ND		ug/m3	0.70	0.70	1
Benzene	ND		ug/m3	0.60	0.60	1
C5-C8 Aliphatics, Adjusted	ND		ug/m3	10	10.	1
Toluene	ND		ug/m3	0.90	0.90	1
Ethylbenzene	ND		ug/m3	0.90	0.90	1
p/m-Xylene	ND		ug/m3	0.90	0.90	1
o-Xylene	ND		ug/m3	0.90	0.90	1
Naphthalene	ND		ug/m3	1.1	1.1	1
C9-C12 Aliphatics, Adjusted	ND		ug/m3	10	10.	1
C9-C10 Aromatics Total	ND		ug/m3	10	10.	1

Project Name: BATCH CANISTER CERTIFICATION
Project Number: CANISTER QC BAT

Lab Number: L1826681
Report Date: 07/27/18

AIR CAN CERTIFICATION RESULTS

Lab ID:	L1826681-01	Date Collected:	07/12/18 16:00
Client ID:	CAN 2099 SHELF 49	Date Received:	07/13/18
Sample Location:	Not Specified	Field Prep:	Not Specified
Matrix:	Air		
Analytical Method:	96,APH		
Analytical Date:	07/13/18 20:28		
Analyst:	RY		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbons in Air						
1,3-Butadiene	ND		ug/m3	0.50	0.50	1
Methyl tert butyl ether	ND		ug/m3	0.70	0.70	1
Benzene	ND		ug/m3	0.60	0.60	1
C5-C8 Aliphatics, Adjusted	ND		ug/m3	10	10.	1
Toluene	ND		ug/m3	0.90	0.90	1
Ethylbenzene	ND		ug/m3	0.90	0.90	1
p/m-Xylene	ND		ug/m3	0.90	0.90	1
o-Xylene	ND		ug/m3	0.90	0.90	1
Naphthalene	ND		ug/m3	1.1	1.1	1
C9-C12 Aliphatics, Adjusted	ND		ug/m3	10	10.	1
C9-C10 Aromatics Total	ND		ug/m3	10	10.	1

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Serial_No:07271815:55
Lab Number: L1828020
Report Date: 07/27/18

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
N/A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1828020-01A	Canister - 6 Liter	N/A	NA			Y	Absent		APH-10(30),TO15-SIM(30)
L1828020-02A	Canister - 6 Liter	N/A	NA			Y	Absent		APH-10(30),TO15-SIM(30)
L1828020-03A	Canister - 6 Liter	N/A	NA			Y	Absent		APH-10(30),TO15-SIM(30)
L1828020-04A	Canister - 6 Liter	N/A	NA			Y	Absent		APH-10(30),TO15-SIM(30)
L1828020-05A	Canister - 6 Liter	N/A	NA			Y	Absent		APH-10(30),TO15-SIM(30)
L1828020-06A	Canister - 6 Liter	N/A	NA			Y	Absent		APH-10(30),TO15-SIM(30)
L1828020-07A	Canister - 6 Liter	N/A	NA			Y	Absent		APH-10(30),TO15-SIM(30)
L1828020-08A	Canister - 6 Liter	N/A	NA			Y	Absent		APH-10(30),TO15-SIM(30)

Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

- Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.
- Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.
- Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.
- Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.
- Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: DU Report with 'J' Qualifiers



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedances are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: CUMMINGS BEVERLY
Project Number: CUMMINGS BEVERLY

Lab Number: L1828020
Report Date: 07/27/18

REFERENCES

- 48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.
- 96 Method for the Determination of Air-Phase Petroleum Hydrocarbons (APH), MassDEP, December 2009, Revision 1 with QC Requirements & Performance Standards for the Analysis of APH by GC/MS under the Massachusetts Contingency Plan, WSC-CAM-IXA, July 2010.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

EPA 300: DW: Bromide

EPA 6860: SCM: Perchlorate

EPA 9010: NPW and SCM: Amenable Cyanide Distillation

SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; EPA 353.2: Nitrate-N, Nitrite-N; SM4500NO₃-F: Nitrate-N, Nitrite-N; SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B

EPA 332: Perchlorate; EPA 524.2: THMs and VOCs; EPA 504.1: EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, EPA 350.1: Ammonia-N, LACHAT 10-107-06-1-B: Ammonia-N, EPA 351.1, SM4500NO₃-F, EPA 353.2: Nitrate-N, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO₄-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.

EPA 624: Volatile Halocarbons & Aromatics,

EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625: SVOC (Acid/Base/Neutral Extractables), EPA 600/4-81-045: PCB-Oil.

Microbiology: SM9223B-Colilert-QT, Enterolert-QT, SM9221E, SM9222D.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. EPA 200.8: Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. EPA 245.1 Hg. EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



AIR ANALYSIS

CHAIN OF CUSTODY

320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: FSL Associates, Inc

Address: 358 Chestnut Hill Ave
Boston, MA 02135

Phone: (617) 232-0001

Fax:

Email: bhoskins@fslassociates.com

 These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments: Please have report similar in format to the previous reports for this project, i.e., report 3 values, lowest analytical detection limit, list all method compounds, etc.

Project-Specific Target Compound List:

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION					Sample Matrix*	Sampler's Initials	Can Size	ID Can	ID - Flow Controller	TO-15	TO-15 SIM	APH	Submitted Non-Petroleum HC's	Fixed Gases	Solvents & Mercaptans by TO-15	Sample Comments (i.e. PID)
		End Date	Start Time	End Time	Initial Vacuum	Final Vacuum												
8020-01	S-135E.1	7/20/18	3:08	2:50	-29.82	-00	AA	BAH	6L	1513	0284	XX						
-02	S-135E.2	7/20/18	3:10	2:52	-30.45	-0.22	AA	BAH	6L	2483	0062	XX						
-03	S-135E.3	7/20/18	3:12	2:54	-31.08	-1.8	AA	BAH	6L	2057	0335	XX						
-04	S-140A.1	7/20/18	2:45	2:37	-30.10	-4.45	AA	BAH	6L	2117	0962	XX						
-05	S-140A.2	7/20/18	2:48	2:39	-30.20	1.07	AA	BAH	6L	6118	0729	XX						
-06	S-140A.3	7/20/18	2:52	2:43	-30.26	-41	AA	BAH	6L	2259	0234	XX						
-07	S-140A.4	7/20/18	2:53	2:42	-30.38	-2.5	AA	BAH	6L	2113	0950	XX						
-08	DUP	7/20/18	2:53	2:41	-30.34	-14	AA	BAH	6L	976	0846	XX						

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)

SV = Soil Vapor/Landfill Gas/SVE

Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By: Ken Nobert Biosense AAL	Date/Time: 7/20/18 15:07	Received By: AAL 7/20/18 15:07	Date/Time: 7/20/18 18:30
	7/20/18 20:31	B. P. R. i.	7/20/18 20:31